LINKING LABOUR FORCE PARTICIPATION, EDUCATION, LABOUR WAGES AND HOUSEHOLD CONSUMPTION IN DEVELOPING COUNTRIES; PUSH AND PULL EFFECTS IN SELF-EMPLOYMENT - EVIDENCE FROM NIGERIA

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Thesis Summary

The contribution of this thesis is in understanding the origins in developing countries of differences in labour wage and household consumption vis-à-vis educational abilities (and by extension employment statuses). This thesis adds to the labour market literature in developing countries by investigating the nature of employment and its consequences for labour wage and household consumption in a developing country. It utilizes multinomial probit, blinder-oaxaca, Heckman and quantile regressions to examine one human capital indicator: educational attainment; and two welfare proxies: labour wage and household consumption, in a developing country, Nigeria. It finds that, empirically, the self-employed are a heterogeneous group of individuals made up of a few highly educated individuals, and a significant majority of 'not so educated' individuals who mostly earn less than paid workers. It also finds that a significant number of employers enjoy labour wage premiums; and having a higher proportion of employers in the household has a positive relationship with household consumption. The thesis furthermore discovers an upper educational threshold for women employers not found for men. Interestingly, the thesis also finds that there is indeed an ordering of labour wages into low-income self-employment (which seems to be found mainly in "own account" self-employment), medium-income paid employment, and high-income self-employment (which seems to be found mainly among employers), and that this corresponds to a similar ordering of low human capital, medium human capital and high human capital among labour market participants, as expressed through educational attainments. These show that as a whole, employers can largely be classed as experiencing pulled self-employment, as they appear to be advantaged in all three criteria (educational attainments, labour wage and household consumption). A minority of self-employed "own account" workers (specifically those at the upper end of the income distribution who are well educated), can also be classed as experiencing pulled self-employment. The rest of the significant majority of self-employed "own account" workers in this study can be classed as experiencing pushed self-employment in terms of the indicators used.

Employers, Paid Workers, Self-Employed, Education, Labour Wage, Household Consumption

To God be the Glory,

To my Parents, Siblings (*Toyin, Tayo & Tope*) and all those who helped me along the way.

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Special thanks to the RDP office team of Jeannette, Irene, Ranjit & Liz, and also to Professor Stephanie Decker for the opportunity to visit the World Bank; you can't know how much I appreciate you all. I would also like to thank my students, colleagues, friends and faculty of the Economics and Strategy Group and the whole of Aston Business School. Aston University and the city of Birmingham have been amazing.

Art and Shaolin.

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Tolu Olarewaju.

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CHAPTER 1: INTRODUCTION AND CONCEPTUAL MODEL

1.1 INTRODUCTION

It is conventional in the economics literature that individuals, as economic agents, maximise utility (or welfare); and that welfare or utility is, in large measure, a function of their consumption. Their ability to consume, in turn, is dependent on their income, or their ability to convert their human (and physical) capital into income streams. The development economics literature suggests that in developing economies – indeed, increasingly in developed economies as well – there is market failure that results in underutilisation or non-utilisation of human capital (or capabilities) such that an individual's income is often not commensurate with his/her stock of human capital.

These contexts are generally characterised by multi-tiered labour markets, whereby people with different levels of human capital are clearly clustered in different types of occupations. Ceteris paribus, the (relatively few) highly educated individuals tend to be in well-paid occupations, the dominant majority of individuals with low levels of education tend to be in occupations that are associated with low incomes, and individuals with intermediate levels of education tend to be in occupations that are associated with commensurately intermediate levels of income.

This conventional view of labour markets in developing countries has important implications for the discussion about push vs pull self-employment. Consider for the moment that self-employment is homogeneous and that the alternative is paid employment. In that case, if the expected income from self-employment is higher, we would expect self-employment to be associated with individuals with higher human capital, on the one hand, and higher income (and consumption), on the other. The reverse would be true if the expected income from paid employment is higher. (Note that we deliberately exclude the issue of the relative variability in labour wages associated with these occupations, to keep the narrative simple at this stage; but a risk premium for self-employment does not affect the fundamentals of the argument in any way.)

If, however, self-employment is heterogeneous, such that the expected labour wage from self-employment can be higher or lower than the expected labour wage from paid employment, depending on the nature of self-employment, then the relationship between their current occupational status, human capital, and the income flows generated from their human capital may not be – for the lack of a better expression – aligned in a linear fashion. Speculatively, there may be an ordering of low-income self-employment, paid employment and high-income self-employment that corresponds to a similar ordering of low human capital, medium human capital and high human capital among the labour market participants.

Since rationality suggests that individuals would choose higher income (and consumption) over lower income (and consumption), this in turn would enable us to hypothesise and speculate about whether we observe push self-employment among a group of individuals who otherwise would have wanted paid employment and, at the other end of the distribution, a group of individuals who have chosen self-employment over paid employment on the basis of their expected labour wages from these two types of occupations.

Consequently, this thesis draws from a segment of the literature that proposes that self-employment in developing countries is an employment choice that individuals self-opt for; and from another strand of literature that suggests that self-employment may be an outcome that results involuntarily for individuals due to the stylised/conventional fact that the labour markets in developing countries do not clear.

It is currently agreed upon by a majority of the labour force literature (that will be surveyed in chapter 2), that the occupational choice could be affected by a plethora of factors that typically fall into the psychological, social, economic and cultural categories. These could include wage (pecuniary) and non-wage (non-pecuniary) factors; hence a lot of models with and without restrictions abound. Researchers in the labour market field have done superb work with exogenous and endogenous variables and under certain conditions e.g uncertainty, with more experience, entrepreneurial optimism, credit markets, government intervention e.t.c. Thus generally, the occupational decision could be affected by a profusion of variables some of which are captured in the diagram below:

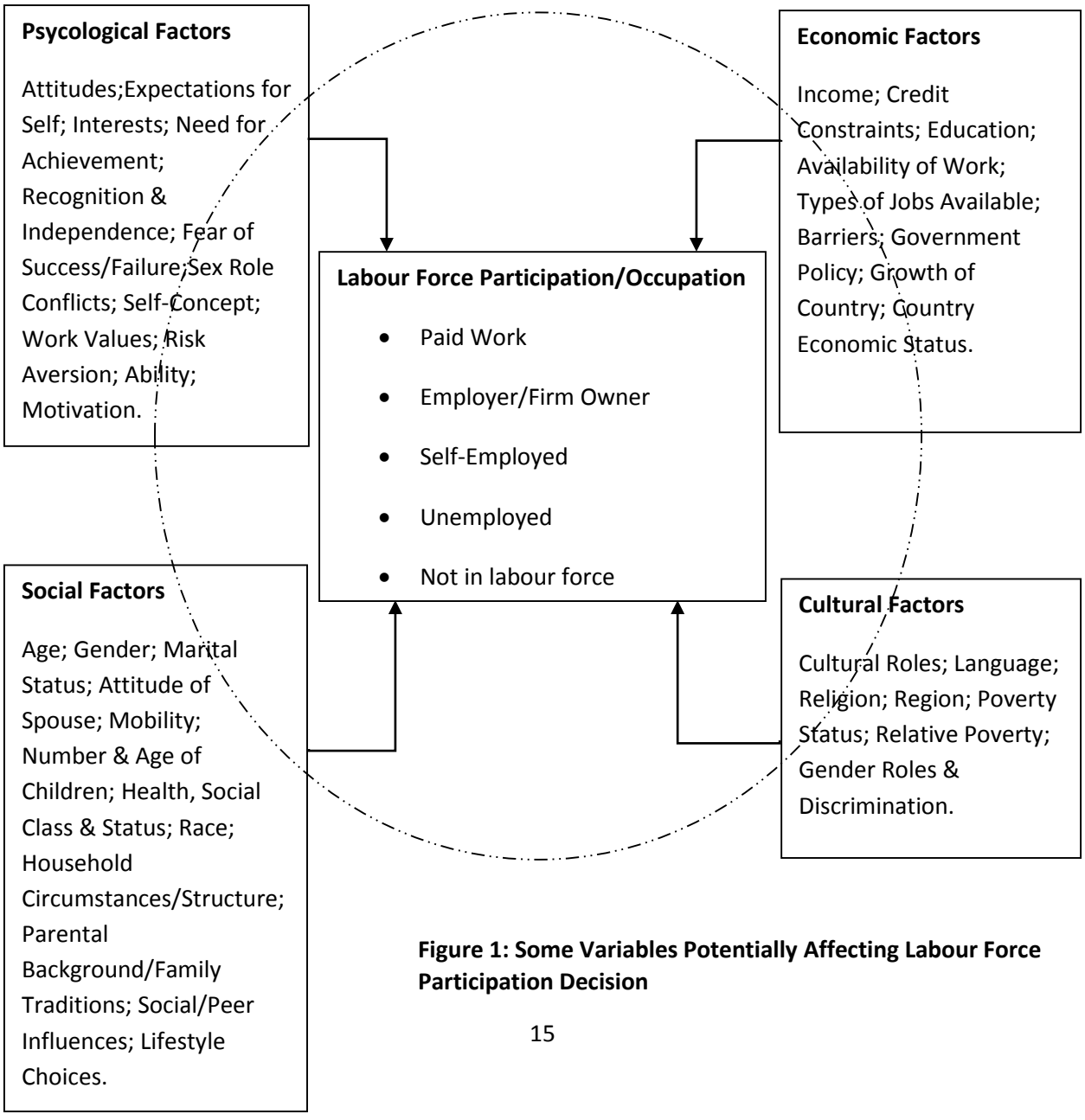


Figure 1: Some Variables Potentially Affecting Labour Force Participation Decision

As can be seen in Figure 1 above, many variables can influence the labour force participation decision of individuals. It is also possible for the variables to interact with each other and some of these variables like age, gender, marital status, language, race, e.t.c. are clearly exogenous determinants of labour force participation/occupational choice, some variables are not clearly so and others are endogenous determinants. The aim of this thesis is to investigate the available variables utilizing data from a developing country to empirically investigate the relationship between labour force participation, educational attainments, labour wage and household consumption. Thus the reader should understand the caveats around interpreting the results of the thesis, especially for variables that are unavailable.

With particular reference to the current literature on the labour force in developing countries, it is evident that eminent scholars have attempted contributed to the literature; and the evidence remains mixed as to whether self-employed individuals in developing countries are at an advantage or not, in terms of pecuniary and non-pecuniary indicators, when compared to those engaging in paid jobs. However, some general conclusions have been drawn from the literature so far. These are that gender, age, marital status, the availability of capital, local community acceptance, the economic sector individuals are engaged in, and individual educational attainments, could all influence the occupational status decision.

This thesis consequently adds to the developing country labour force literature by further investigating the relationship(s) between labour force participation, educational attainments, labour wage and household consumption using the available variables. Since the occupational status held by individuals should influence labour wage and ultimately household consumption the thesis undertakes a specific investigation into labour force participation, labour wages and household consumption. It invokes rationality as a von Neumann-Morgenstern utility, which has implications for push and pull self-employment.

Thus, the starting point of this thesis is a desire to understand the origins in developing countries of differences in labour wage and consumption vis-à-vis educational abilities, and by extension employment statuses. It addresses the need for a larger body of empirical evidence about the nature and impact of occupational statuses in developing countries. The conceptual model used throughout this thesis is shown below:

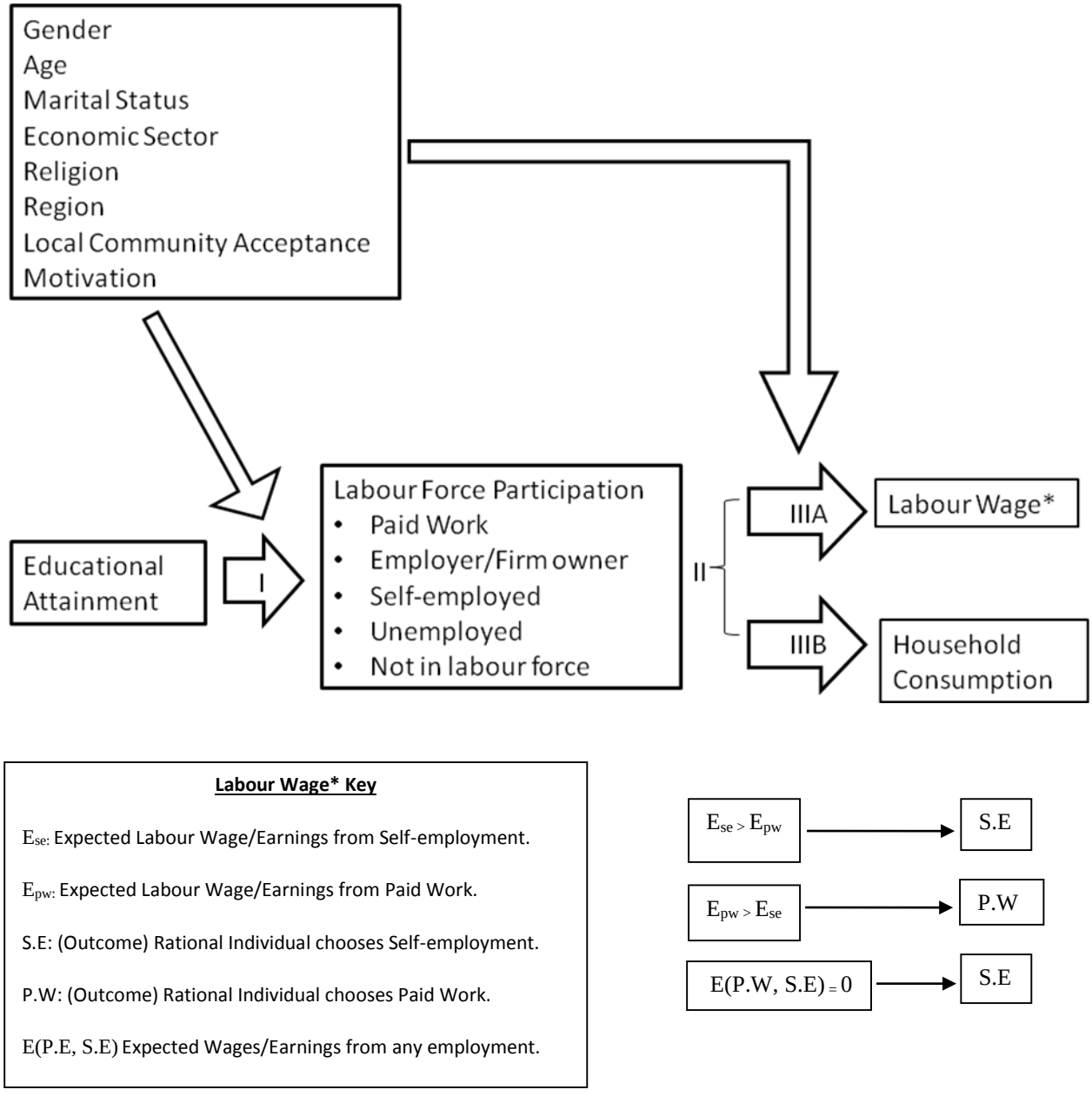


Figure 2: Conceptual Model

In the conceptual framework that is shown in Figure 2, an individual's characteristics such as gender, age, marital status, economic sector, human capital (as captured by his/her educational attainment), geographical location, religion, region, community acceptance, etc. determines their occupation. The reader is again advised to be careful to understand the caveats when interpreting the results of the thesis as a full range of observed and unobserved variables are not included in the conceptual model. Consequently, as Figure 3[1] below shows in the case of labour wage, motivation also becomes a factor associated with the employment choices (as for example, individuals can be attracted to self-employment – pulled, or driven by a lack of work options – pushed). The individual's occupation, in turn, determines his/her income flow, ceteris paribus, and influences his/her consumption. To this extent there is a clear (though not necessarily linear) mapping between an individual's human capital, occupational status and income/wage.

However, while an individual's income/wage could influence his/her consumption to a significant extent, the mapping between income, which we can observe at an individual level, and consumption, which we observe at the household level, is mediated by household level bargaining, and by decisions that take into consideration other factors such as time flexibility associated with various occupations. In other words, it is not entirely possible to draw conclusions about push vs. pull self-employment on the basis of the mapping between educational attainment, occupation and individual income alone. Rationality would suggest we should take into consideration the relationship between the distribution of occupations among household member adults and household level consumption as well (two versions of per capita household welfare proxies, based on consumption are used, *household consumption per capita and adult equivalised household consumption per capita*). Thus the investigation is to be done in three phases.

First, this thesis investigates how educational attainments affect the probability of holding any of the employment/occupational statuses highlighted in the conceptual model; this analysis is shown on the left hand side of Figure 2 and is represented by the notation "I". As it stands, there is

[1] Labour wage alone is often not the only determining factor for opting for an occupational status as non-pecuniary factors can also be considered. This has only been used to simplify the inquiry in this case.

substantial evidence to show that educational attainment could be the most important factor influencing employment status, especially in developing countries, and this part of the thesis is consistent with that literature. Educational human capital has especially been seen as a crucial factor influencing the occupational decision, since rational individuals should seek to maximise their returns on educational investments. The first part of the thesis thus seeks to answer the question: "How do educational attainments affect the probability of holding a specific occupational status in a developing country?"

Education could affect the occupational status probability in differing ways; paid workers generally need to be educated to some degree, and the literature seems to suggest that they should be the most educated occupational group of individuals in developing countries. This is largely because education serves as a prerequisite for most paid sector jobs and serves as a signal to prospective employers in the job market, in addition to acting as a sorting mechanism both for job seekers and employers. Thus one would normally expect paid workers to exhibit higher levels of educational attainment compared to the rest of the labour market spectrum.

Developing countries are also characterised by a large pool of individuals who report themselves as being in self-employment. The main question currently in the developing country labour market literature seems to be: "Are these individuals in productive self-employment out of choice or have they been forced into self-employment out of necessity because they cannot find paid sector jobs?" The literature seems to suggest that a significant majority of individuals engaged in developing country self-employment do this out of necessity because the labour markets in such countries do not clear; as a result such individuals cannot find paid jobs and hence resort to self-employment to make ends meet.

In this case, labour force theory would expect individuals engaged in developing country self-employment to be people who have lower educational attainments than paid workers. Since employers go to the labour market to seek the best (most qualified) candidates for the limited

number of jobs on offer, they should engage the cream of the educated population; and individuals with higher educational attainments should, in theory, be employed while individuals with lower educational attainments should be left without jobs.

Employers are usually placed in the same class as the self-employed in the labour market/force literature because they are essentially self-employed individuals who employ other individuals. Thus they have been described by some as "the successful self-employed", since they have moved out of "own account" self-employment (where a self-employed individual essentially works for himself/herself) to actually hiring other people, which suggests a higher turnover, larger budget and more business.

However, recent studies seem to indicate that not distinguishing employers from self-employed "own account" workers could be misleading, as the two groups might be distinct. One of the major contributions of this thesis is to endorse such a distinction and to propose this in terms of an analysis of educational attainments, labour wage and household consumption. Specifically, for this element/part of the thesis, it will be important to see if employers and self-employed own account workers have distinct educational attainments.

Unemployed individuals and people not in the labour force could also be affected by educational attainments. By standard definitions, the main difference between the two groups of individuals is that unemployed individuals are still actively/currently looking for work, while people not in the labour force are also unemployed, but are not actively/currently looking for employment. From an educational perspective, it could be suggested that unemployed people cannot find paid work due to their low educational attainments. From the same perspective, people not in the labour force might recognise that their educational attainments are too low for meaningful employment and decide to withdraw from employment activities to acquire some education if available; or simply that they too, like the unemployed, have low educational attainments when compared with paid workers or the self-employed. This is in addition to numerous reasons for unemployment and for

individuals not to engage in employment activities in developing countries due to pecuniary and non-pecuniary reasons.

This way, we can see that educational attainments affect all the occupational groupings of individuals. This thesis additionally uses literature- appropriate control factors in terms of age, sex, marital status, sector, region, credit constraints, religion, having the ability to speak the local language, and other controls as available from the data. This is because clearly these controls can interact with educational attainments to affect the occupational outcome. Thus the first part of the thesis answers the question: "How do educational attainments affect the probability of holding a specific occupational status in a developing country?"

Secondly, this thesis investigates how holding an occupational status affects the labour wage/income of individuals; this part of the thesis is represented by the Roman notation "IIIA" in Figure 2 (the conceptual model). Since 'unemployed individuals' and 'individuals not in the labour force' do not earn labour wages, they are not involved in the second part of the study[2]. For the second part of the analysis, the thesis invokes the assumption of expecting individuals to be von Neumann-Morgenstern rational utility maximisers with regards to occupational income/labour wage, in a relationship which can be expressed in Figure 3 below.

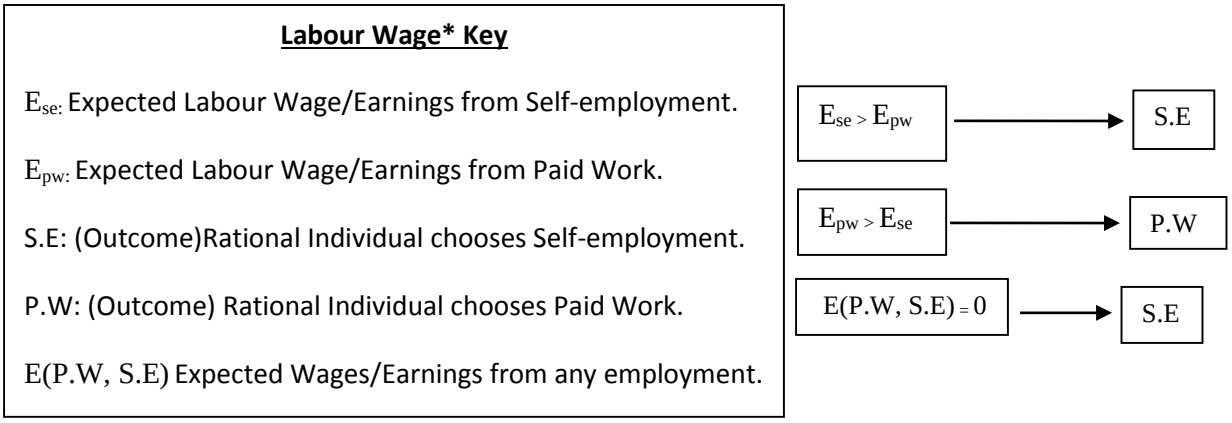


Figure 3: The Occupational Decision of a Rational Utility Maximising Individual (Labour Wage Motivation)

The second part of this thesis goes on to investigate how being in any of the occupational/employment status groups might affect labour wage/earnings. The preliminary concept has been expressed on the right hand side of Figure 2 (the conceptual model), while Figure 3 above illustrates the occupational outcomes for a rational utility maximizing individual based on expected earnings from each employment status. The thesis aligns itself with the part of the literature that theorises that the employment decision is made by an individual who will decide which employment status to embark on, depending on the expected earnings/income that can be derived from each employment status.

[2] In developing countries including the one investigated in this thesis, unemployment benefits are virtually non-existent. Unemployed individuals typically either resort to some sort of petty self-employment to subsist or may rely on handouts from relatives and family members. Unemployment as it affects individuals in developing countries will be discussed in Section 2.4.1.6 of the thesis.

Thus individuals will choose whatever employment status gives a maximum possible labour wage stream depending on their individual characteristics: in this case choosing between self-employment and paid work, and settling for whichever gives more expected earnings. Thus the thesis also investigates how labour wage and later on, household consumption expectations could motivate individuals into opting for or being forced into an occupational status.

A rational utility-maximising individual should consider all the variables on the right hand side of Figure 2; specifically his/her gender, age, marital status, economic sector, religion, region, local community acceptance, educational attainments and any relevant variable that can affect labour wage/income. Then he/she should pick an employment status that gives him/her the highest possible labour wage stream. Individuals are expected to choose rationally which occupational status to engage in because any possible utility (satisfaction) will only be derived through income; note that the thesis has ignored the many non-pecuniary benefits that might accrue from an employment/occupational status.

For example, within self-employment, being one's own boss, having more time for vacations, pursuing personal interests, having additional family time and other non-pecuniary factors have increasingly been highlighted as reasons for choosing self-employment, but this cannot be measured in the available data. Thus this thesis contributes to the branch of economics that views occupational rationality as a 'von Neumann-Morgenstern' function in terms of labour wage/income i.e. individuals choose what occupational status to engage in based on expected labour wage/income from the occupational status.

Also, it is very important to note at this point that a departure from the model in Figure 2 will be an abnormality arising (a variation) from either a non-pecuniary benefit associated with the occupational status in question, or out of necessity; and would be akin to a "Dutch book" in terms of expected labour wage/income i.e. a loss in expected labour wage from engaging in that employment option as opposed to being engaged in another employment option.

The thesis is also careful to note that there can exist individuals whose expected labour wage/income from either paid employment or self-employment is zero, i.e. the individual has no chance of a paid sector or self-employment job. Such individuals can still opt for self-employment as an employment option no matter how little the proposed wage from that decision. This is because the self-employment option can at least in theory serve as a source of labour wage/income, however modest, which is better than a labour wage of zero. (The self-employment sector is also an attractive alternative as it usually has no significant legitimate barriers to entry apart from financial constraints and others as identified in the literature). This labour wage would be a better option than having no labour wage at all, especially since there are virtually no unemployment benefits in developing countries which the study in this thesis relates to.

Thus in the conceptual model (Figure 2), there exists an indirect relationship between choice of employment (or unemployment) and labour wage/income. Specifically, self-employment is always an occupational option for an individual, irrespective of his/her educational status. Abstracting from non-pecuniary issues, what a person does is to compare the likely or expected labour wages from alternative sources of employment and choose the one that pays the highest. However, any individual can decide to go into self-employment whether it pays the highest return or not; while only those individuals who have the opportunity of being offered jobs in the paid sector enjoy the luxury of choosing the more rewarding employment option.

This means that in the self-employment occupational category there could exist two groups of individuals. First, there are individuals who have decided to opt for self-employment because their monetary returns derived from being in self-employment are higher than they would have gained as paid workers; and second, there can also be individuals whose monetary returns derived from being in self-employment are lower than they would have been from earnings gained as paid workers. As Figure 3 shows, in a situation where rationality in terms of monetary returns is invoked, these individuals are in self-employment simply because they have no other choice but to be in self-employment; hence they remain in self-employment despite their lower returns in terms of labour wages/incomes.

Thus we can infer that the self-employment occupational category could be segmented with an ordering of *"low-income self-employment", "paid employment"* and *"high-income self-employment"* that corresponds to a similar ordering of low human capital, medium human capital and high human capital among the labour market participants. Trying to investigate conditional labour wages/incomes to decide which individuals belong to these two classes of self-employment will be a major cornerstone of this thesis and forms its second part.

For the third part of the thesis, the researcher investigates how the distribution of household members among the employment states could affect household consumption; this analysis is represented by the Roman notation "IIIB" in the conceptual model (Figure 2). This investigation is imperative because in developing countries there could exist intra-household bargaining in the labour market for occupational/employment statuses, as households choose to maximise their combined household consumption from labour.

For instance, in a household containing four employable individuals, two of these individuals could choose to venture into paid work, with the intention of ensuring a secure income stream and minimizing the risk of variation in earnings - especially since wage employment implies that a stable salary or income is received at the end of the stated contract period. The other two employable adults could choose to opt for self-employment and hence run the risk of some months of low income and other 'more profitable' months - especially since if these individuals are successful in the long run, they could return to the household with considerable dividends from their ventures.

Note that the reason for individuals choosing their employment/occupational status in the above example has been considered from the point of view of combined household earnings. Thus it can be observed that at the household level, employment/occupational decisions are mediated by household level bargaining and decisions that might take into consideration other household

factors such as household consumption associated with various occupations, especially since engaging in certain activities could free individuals to pursue activities that benefit the entire household.

Hence looking at occupational statuses through the lens of labour wage/income alone could be misleading, especially for a developing country context where household units play a fundamental role in everyday life. Also, most models and current studies in the literature that investigate the relationship between occupational statuses make use of individual variables - where the employment choice depends on the relative earnings from being either in self-employment or finding a paid job (essentially like the second part of this thesis).

A technique needs to be used, and possibly adopted in the developing country labour market literature, that can take into account household data, and the conventional fact that in developing countries decisions on occupational choice are often made on a household level as households try to maximise their joint consumption.

This thesis fills that gap in the literature by investigating the total household consumption for Nigerian households conditional on the proportion of household members in each of the employment/occupational statuses. Standard literature controls that show household head, demographic, geographic, employment and educational information are used to add validity to the findings.

For this third assessment, theory would suggest that the employment/occupational statuses that bestow the highest income streams from the second assessment ("IIIA"; where labour wage/incomes were investigated) should also generate the highest household consumption levels. Hence if paid work generates high income streams, then having a higher proportion of paid workers

in the household should also confer higher household consumption levels, compared to having a higher proportion of self-employed individuals, and vice-versa.

Thus the thesis contains three empirical investigations and proposes to show:

1. The typical educational attainments of individuals in each occupational category; and by extension indicate if self-employment is dominated by less educated individuals, who are opting for self-employment as an occupational status because they lack the educational attainments to apply for paid/wage sector jobs; or if self-employment is dominated by highly educated individuals.

2. How holding any of the employment statuses affects labour wage/income; and by extension indicate if self-employment is dominated by individuals who experience a penalty or premium in terms of labour wage/incomes, compared to paid workers.

3. How proportions of household individuals engaged in each occupational status affect household consumption; and by extension indicate if having a higher proportion of self-employed individuals/persons increases or reduces household consumption.

The self-employed who are disadvantaged compared to paid workers in terms of education, labour wage or household consumption are usually described in the literature as being "pushed" into self-employment while those who are advantaged along the same lines are normally described as being "pulled" into self-employment. The traditional self-employment literature typically assumes that self-employment in developing countries is of the pushed nature.

In this case the premiums or penalties in relation to any of the occupational statuses will be seen in the part of the thesis represented by the Roman notation "II", which is the sum of the total 'welfare' proxy investigations containing the section where the thesis investigates *labour wages/incomes* ("IIIA") and where it investigates two rough proxies of per capita household

welfare, *household consumption per capita and adult equivalised household consumption per capita* ("IIIB"). This is more relevant to the current literature and has implications for future research and policy, as both labour wage/income and household consumption could interact in diverse ways. Also the current literature seems to suggest that individuals with higher labour wages will also enjoy higher household consumption (a finding not particularly prominent in this enquiry).

This thesis, therefore, adds to the labour force literature in developing countries by investigating the nature of employment and its resultant labour wage and household consumption consequences in a developing country, Nigeria, and by showing that, empirically, the self-employed are a heterogeneous group of individuals made up of a few highly educated individuals and a significant majority of 'not so educated' individuals, who mostly earn less than paid workers (depending on where they are located on the labour wage/income and household consumption quantile distribution). It also finds that a significant number of employers enjoy labour wage premiums, and having a higher proportion of employers has a positive relationship with household consumption. The thesis furthermore finds an upper educational threshold for women employers which is not found for men.

Since it is also possible to observe if self-employed (employer and own account) individuals are worse or better off compared to paid workers, this thesis has implications for the push and pull self-employment literature, and policy implications in helping to distinguish those individuals who have possibly been pulled or pushed into self-employment in terms of educational attainments, labour wages and household consumption.

The results show that as a whole, employers can largely be classed as pulled into self-employment as they appear to be advantaged in all three criteria (educational attainments, labour wage/income and household consumption). A minority of self-employed "own account" workers, specifically those at the upper end of the income distribution who are well educated, can be classed as pulled

into self-employment. The rest of the significant majority of self-employed individuals in this study can be classed as being pushed into self-employment.

Overall, the thesis shows that in a developing country, as illustrated by Nigeria, occupational statuses, educational attainments, labour wages and household consumption are closely linked. It also shows that educational attainments are paramount in determining which employment status an individual holds, which in turn affects labour wage and household consumption in discernible patterns.

1.2 OVERVIEW

In this section of the thesis, the researcher will briefly examine how the other dependent/control variables, located on the left hand side of the conceptual model in Figure 2, might influence the occupational status of individuals in developing countries. In other words, how gender, age, marital status, economic sector, religion, local community acceptance and credit constraints might influence the occupational status of individuals in developing countries.

The gender debate as regards employment in developing countries is a volatile one. Males are traditionally viewed as bread winners in such societies and are conventionally expected to choose an occupational status that provides a high enough income stream for their families. Women in such countries (and indeed in developed countries) could need to perform maternal duties and could face some bias in the labour market pushing them into self-employment. Married women who have children in particular may opt for self-employment if they find that the employment option offers them the time flexibility to cater for their families. For literature purposes however, the thesis is mainly concerned with how gender might affect the occupational outcome, and whether men and women have differing probabilities of holding an occupational status. In addition, the thesis also investigates how gender might affect labour wage in developing countries.

Age has also been identified as a factor that could influence the occupational status decision. It has already been established that age and income usually have an inverted U-shape relationship. Additionally, younger workers might want to "try their luck" in the self-employment sector given the energy and vigour associated with youth. However, older workers might be better suited to the self-employment sector since they could have acquired more capital in terms of experience and monetary savings from working in the paid sector. Age could thus have an ambiguous relationship with occupational status even though its relationship with income is more apparent in the economic literature.

Marital status, economic sector and religion have all been found to have a very ambivalent relationship with occupational status and labour wage/incomes. Married individuals in particular could feel more pressured to resort to self-employment to support their families if paid sector jobs are unavailable. So far in the literature several studies have also reported mixed findings as regards economic sector and religion; it will thus be beneficial to engage in an inquiry that controls for these variables.

Local community acceptance could possibly play a major part in occupational status decisions as studies show that if individuals reside in communities where a high social status is associated with self-employment or paid work, individuals would like to move to such occupations. Also, other related constraints like the availability of credit and local infrastructure could influence the choice whether or not to be self-employed, since self-employment usually involves some sort of capital investment and the use of local infrastructure. Studies additionally show that having a social network could be beneficial to self-employment; thus being able to communicate in the local language might be a sign of belonging to the local community, and could possibly help in negotiating business contracts informally (and formally in some instances).

Regional differences especially within developing countries like the one being investigated, Nigeria, can also influence the occupational status decision. If there are regional variations related to religion, local community acceptance and available opportunities, this might impact how individuals decide what occupational statuses to opt for.

Finally, the contextual motivation associated with the employment choices could influence what occupational statuses individuals opt for in developing countries. Individuals could be attracted to self-employment (pulled) or driven into self-employment by a lack of work options (pushed). Figure 3 has pointed out that A rational utility-maximising individual should consider all the variables on the right hand side of Figure 2; specifically his/her gender, age, marital status, economic sector, religion, region, local community acceptance, educational attainments and any

relevant variable that can affect labour wage/income. Then he/she should pick an employment status that gives him/her the highest possible labour wage/income stream. Individuals are expected to choose rationally which occupational status to engage in because any possible utility (satisfaction) will only be derived through income; note that the thesis has ignored the many non-pecuniary benefits that might accrue from an employment/occupational status.

1.3 RESEARCH AIMS AND OBJECTIVES

The interest for this thesis as stated earlier is the desire to understand where differences in labour wages/incomes and household consumption levels come from in developing countries, as they might depend on any of the employment statuses shown in the conceptual model captured in Figure 2.

The section of the analysis labelled "I" seeks to answer the question: "How do educational attainments affect the probability of belonging to any of the employment states in a developing country?" By investigating this, the thesis aims to discover patterns in educational attainment (if any) as they affect the occupational statuses expressed in the conceptual model. This enquiry should be useful since human capital has already been identified as a major determinant of occupational capital in developed economies. It would therefore be extremely beneficial to empirically investigate for developing countries if there are patterns that might reflect the probability of having a particular employment status, depending on individual human capital expressed in educational attainments.

The whole of the investigation marked "II" is dedicated to the main research objective of this thesis, which aims to uncover how differences in labour wage and household consumption levels relate to any of the employment statuses shown in the conceptual model; this investigation is done in two parts. The aim of the first part of the analysis marked "IIIA" is to empirically analyse how labour wage is determined by labour force participation status after the thesis has observed how educational attainment reflects occupational status in part "I". The second part, marked "IIIB", seeks to determine how household consumption expenditure is determined by the proportion of individuals in each occupational category.

Therefore the thesis makes use of three specific, testable (falsifiable) hypotheses. They are based on precise predictions made from the existing literature and consist of:

Expected Prediction i : From the literature that will be surveyed in section 2.3.1, it is expected that as individuals become more educated in developing countries, they will opt paid work over self-employment. This means that the expected pattern for the data from a developing country is to predict that more educated individuals will be engaged in wage work/paid employment while less educated individuals are expected to be in self-employment. Thus the hypothesis 1 seeks to address this inquiry.

i. "Hypothesis 1"H_1: Educational attainments will affect the probability of belonging to an employment status in a developing country.

The Hypothesis 1 addresses the portion of the conceptual model labelled "I" which seeks to answer the question: "How do educational attainments affect the probability of belonging to any of the employment/occupational states in a developing country?" By performing this analysis, the thesis aims to discover if there are patterns in educational attainments as they affect the occupational statuses. Precisely, the thesis aims to investigate if more educated individuals are to be found in self-employment or paid-employment/wage work.

Expected Prediction ii: From the literature that will be surveyed in section 2.4.1, it is expected that self-employed individuals in developing countries will experience a labour wage penalty when compared to wage earners/paid workers. This means that the expected pattern is to predict that individuals in self-employment in the data from a developing country should experience a labour wage penalty compared to wage earners. Thus the hypothesis 2 seeks to address this inquiry.

ii. "Hypothesis 2"H_2: Workers experience a labour wage penalty or premium depending on their occupational status in a developing country.

The Hypothesis 2 addresses the portion of the conceptual model labelled "IIIA" which seeks to empirically analyse how labour wage is determined by labour force participation. By performing this analysis, the thesis aims to discover if there are patterns in occupational statuses as they affect labour wage. Precisely, the thesis aims to investigate if paid/wage workers typically earn more or less than self-employed individuals conditional on observable characteristics.

Expected Prediction iii: From the literature that will be surveyed in section 2.4.2, it is expected that self-employed individuals in developing countries are disadvantaged across a number of welfare indicators when compared to wage earners. This means that the expected pattern is to predict that individuals in self-employment in the data from a developing country should be worse-off in terms of household consumption when compared to wage earners. This also means that having a higher proportion of self-employed individuals in the household workforce should have a negative relationship with total household consumption and having a higher proportion of wage earning household workforce should have a positive relationship with total household consumption. Thus the alternate hypothesis 3 seeks to address this inquiry.

iii. "Hypothesis 3"H_3: Total household consumption expenditure will depend on the employment status composition of employable household adults in a developing country.

The Hypothesis 3 addresses the portion of the conceptual model labelled "IIIB" which seeks to determine how total household consumption is determined by the proportion of household individuals in each occupational category. By performing this analysis, the thesis aims to discover if having a higher proportion of a particular occupational category is beneficial or detrimental to household consumption.

Taken together, the central aim of this thesis therefore is to examine one human capital indicator – educational attainment; and two welfare proxies – labour wage and household consumption for workers, in order to establish their relationship(s) with occupational statuses in developing countries. By extension, since we have the relationship expressed in Figure 2 where rationality should imply that individuals choose whatever employment status gives higher returns in terms of labour wage and household consumption, we can observe if individuals and households are advantaged or disadvantaged (in terms of labour wage/income and total household consumption), given their employment characteristics.

Worthy of note is the conventional fact that labour wage and household consumption could have an influence on each other. Labour wage is expressed at the individual level while household consumption is measured at the household level. The portfolio optimisation of households leads to choices of individual employment that might be aimed at maximising household consumption. This way we can see that activities of individuals as regards labour force activities have an impact on overall household income and hence consumption (less savings and investments). This way, the consumption set of households might be a richer measure of household welfare than is currently reported in the literature.

CHAPTER 2: LITERATURE REVIEW/PREVIOUS RESEARCH

2.1 INTRODUCTION

Since the nature of this enquiry involves related strands of labour force literature, it might be beneficial to begin this section by defining and examining the occupational statuses the thesis aims to empirically investigate according to the literature, before delving into previous research that could have specific implications for this investigation.

Distinguishing employers from "own account" self-employed workers in transition economies, Earle and Sakova (2000) argue that on the one hand, a self-employed worker may be a successful business owner exploiting new opportunities and inventing new products, production processes, and distribution methods. At the other extreme, self-employment status may result from a forced recourse to a residual sector in which the individual's activities and income differ little from those in unemployment; this mirrors the views expressed in Figure 3.

Based on this they argue that the *employers* are clearly genuine business owners because as employers they are creating jobs for others, implying that they have had some success in their business. Employers have been able to hire capital and other inputs (including employees) and combine these to run a business; employers are also more likely to be engaged in self-employment voluntarily. This view agrees with the developing country literature, as previous research shows that employers typically have substantial financial and social capital compared with own account workers (Gollin, 2008, Desai, 2009, Yamada, 1996, Hanley, 2000).

Such a distinction in the self-employment occupational category was also made in a household level analysis by Tamvada (2010); and will additionally be used in this thesis. The author distinguishes between employers, own account workers as well as paid workers, and concludes

that households with a higher proportion of employers enjoy the highest welfare in terms of household consumption, while households with a greater proportion of wage/paid workers come second. These are followed by those with a higher proportion of own account workers; households with a greater proportion of casual labourers come last in the welfare distribution. In line with the current literature, this thesis also defines employers as self-employed persons who have other individuals working for them and receiving incomes.

"Self-employment" has been defined as the employment of persons operating individual enterprises or businesses (Fields, 2013). Self-employment in broad terms can also be classed as the residual category of employment not remunerated by wage (Pietrobelli et al., 2004). Another description of the self-employed is individuals who earn no regular wage or salary but derive their incomes by exercising their profession or business on their own account and at their own risk; many of them operate sole proprietorships (an unincorporated business owned by one person); and those that have no employees are called own account workers (Parker, 2009).

Historically, self-employment may well be the natural economic status of human beings. However; with the advent of settled agriculture and modernisation, driven by the division of labour, gradually paid jobs arrived on the scene (van Stel et al., 2010). By the end of the eighteenth century the prevalence of self-employment had already declined to below 50% of the labour force in several of the present day developed countries (Parker, 2004). This led to the traditional hypothesis of a negative relationship between the share of self-employed workers in the labour market of a country and the development performance (Kuznets, 1973, Kuznets, 1966).

Paid workers are individuals who work for other persons and receive wages or salary at the end of a stipulated contractual period (hourly, daily, weekly, monthly, annually, etc.). The activities these individuals engage in are very diverse, much like their counterparts in self-employment. However, paid employment might be a more secure employment option because there is less variation in

earnings, unlike self-employment that might be characterised by some profitable seasons and other lean periods.

As commonly defined, "unemployment" is a condition whereby an individual is without work but shows a desire for work by actively seeking employment; as opposed to a situation where individuals are without work but are not actively engaged in searching for work. This latter group of individuals are described as being "Out of the Labour Force" (Standing, 2000).

Most researchers regard unemployment as a negative experience as it usually connotes adverse consequences for labour wage/income, status, morale and social integration. Since it is a conventional fact that individuals must receive some income in order to survive, this may take several forms expressed as a simple identity by Standing (2000) as:

$$SI = W + CB + EB + SB + PB$$

Where SI is the individual's total social income, W is the labour wage or income received from work (the variable used in this thesis), CB is the value of benefits or support provided by the family, kin or the local community, EB is the amount of benefits provided by the enterprise in which the person might be working, SB is the value of state benefits provided (which can take the form of insurance benefits or other transfers), and PB is private income benefits, gained through investment, including private social protection.

For the purposes of our investigation, CB, EB and PB are not included, as they are not a part of the conceptual model due to data limitations and anyway should not affect our results significantly because the literature suggests that they are erratic in developing countries. It is also a conventional fact in the literature that SB is negligible in developing countries, as most developing countries,

including the one we investigate, do not provide unemployment benefits or any form of support to individuals directly or indirectly. Thus we are left with W, which represents the labour wage/incomes of individuals. Furthermore, since the unemployed and those not in the labour force do not report or earn any labour wages, their part in this analysis is limited.

2.2.1 LABOUR FORCE PARTICIPATION

This part of the thesis focuses on labour force participation and its observed relationship(s) with education, labour wage and household consumption, as currently described in the literature.

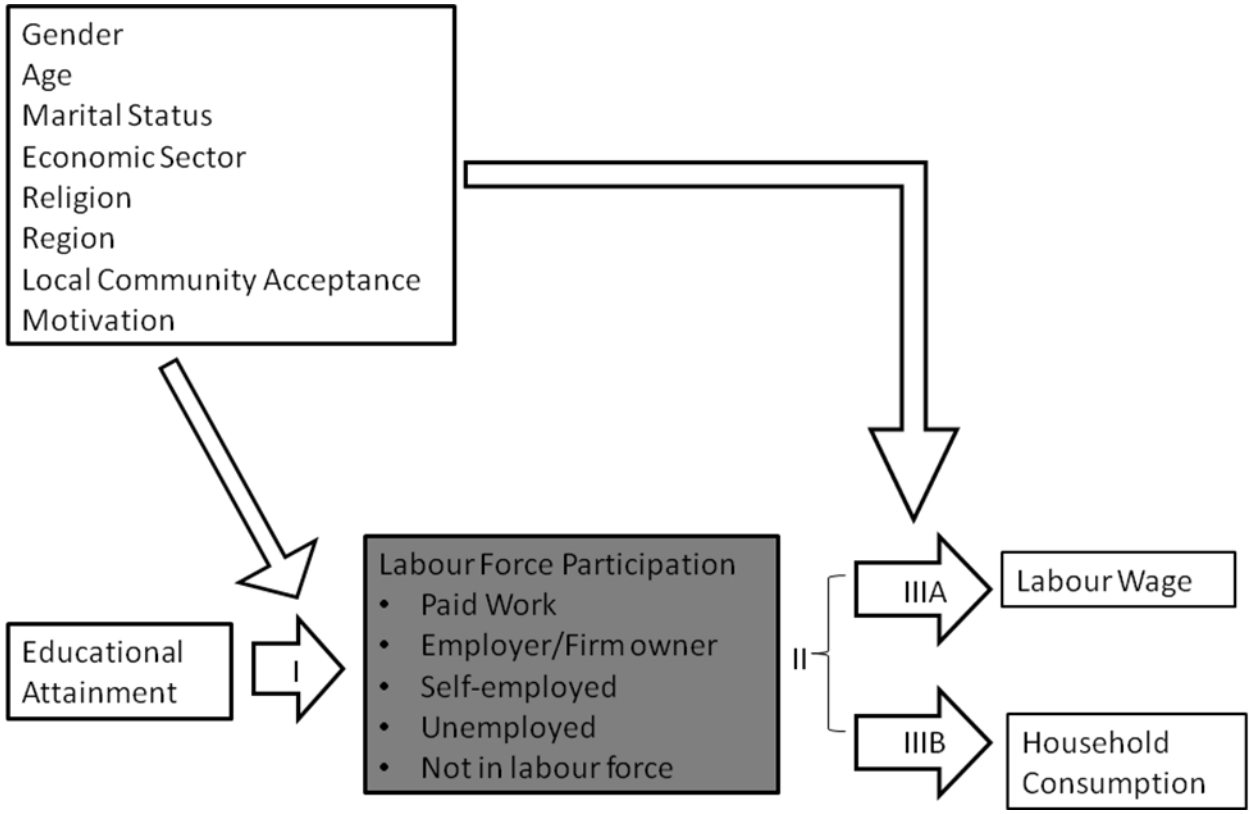


Figure 4: Conceptual Model (as Figure 2)

As regards unemployment and not belonging to the labour force, literature indicates that unemployment is still a striking symptom in many developing countries, and in many cases, open unemployment could affect between 10 – 30 per cent of the urban labour force. In addition, large portions of the labour force in these countries are underemployed – in the sense of lacking the resources and opportunities for increasing their incomes to levels comparable to people with paid work in the modern urban sector.

The sociological literature on developed countries also recognises that different occupations sometimes allocate individuals with different social statuses, and so workers benefit not only from the wage they receive but also from being associated with a particular occupation. Occasionally, cultural differences among societies may translate into different statuses for occupations, and can therefore affect the choice of education and occupation individuals participate in and consequently the equilibrium level of output and wages (Fershtman and Weiss, 1993).

Moreover, the very meaning of seeking work in developing countries - on which the statistics of open unemployment depend – to some extent reflects attitudes and ambitions for a *particular type* of working life, often in wage earning white-collar paid work, rather than the total lack of an alternative source of income or economic activity (Jolly et al., 1973). The fact still remains that, as was the case four decades ago, each year large numbers of school leavers aspire to paid jobs far in excess of the number of available openings. Many of these individuals adjust to the realities of the job market either to take what is going in the way of paid work, or some might decide to make what they can from the self-employment option.

2.3.1 LABOUR FORCE PARTICIPATION AND EDUCATION

The main contribution of this section is that the thesis provides an emphasis on human capital: in particular educational attainment and its association with labour force participation.

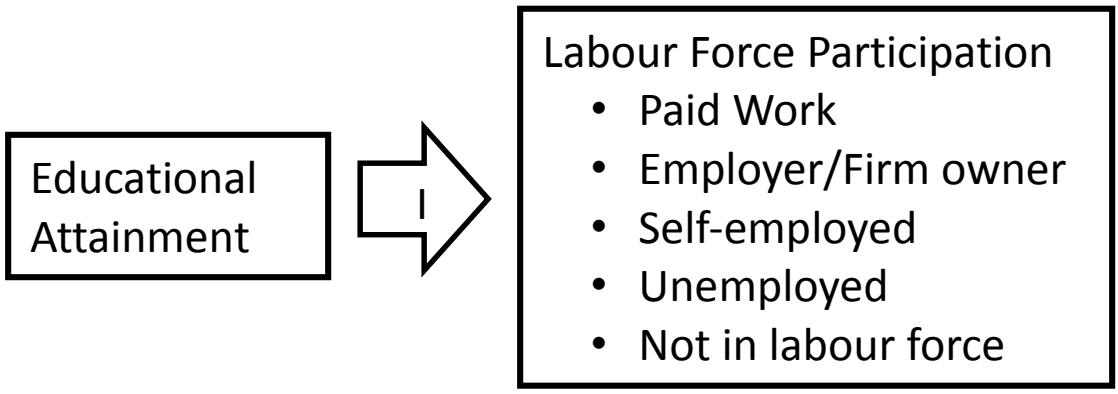


Figure 5: Conceptual Model (Education and Labour Force Participation)

Several researchers have in the past attempted to identify the link between labour force participation and education. In this vein, some authors have made theoretical contributions while others have made empirical contributions to this literature. Looking at occupational status through the lens of educational human capital should thus give insightful results for a number of pertinent reasons.

The literature already proposes that endowments in human capital significantly affect the probability of being in self-employment or paid employment (Robinson and Sexton, 1994, Casson, 1995, Van der Sluis et al., 2005, Parker, 2004). Educational human capital has especially been seen as a crucial factor influencing the occupational decision, as individuals seek to maximise their returns on educational investment. Education also serves as a prerequisite for most paid sector jobs and a signal to prospective employers in the job market in addition to acting as a sorting mechanism both for job seekers and employers. This part of the thesis thus aims to add to the literature by answering the question: "How does educational attainment affect the probability of holding any of the employment statuses in a developing country?" The literature so far is discussed now.

According to the existing literature, economic theory would expect formal education and paid work to have a positive relationship. Since educational attainment is an affirmative sign of human capital endowments prospective employers (including the government, multinationals, NGO's, indigenous employers and other job creators) are likely to sort through potential candidates and employ individuals with relevant skill sets that are needed for the paid/wage earning job. Educational qualifications have been identified as essential employment criteria across a wide range of studies (Jolly et al., 1973, Parker, 2009).

Moreover, Bates (1995) finds that owner educational background is a major determinant of both business survival and the financial capital structure of business start-ups: a finding which has implications for the educational attainment of employers themselves, as outlined below.

The link between self-employment and formal education is generalised in the literature and views have gradually evolved over the decades as the literature has become more robust[3]. It was initially argued that formal education and business ownership would have a positive relationship. This is because education should theoretically, according to the human capital literature, endow business owners with analytical and transaction expertise and information about business opportunities in addition to an understanding of markets and proper business processes: for example, how to apply for business loans, or the right procedures to be taken when engaging in different profitable ventures (Casson, 1995, Parker, 2009).

Adam Smith used the example of a small grocery to illustrate this point: "The owner of such an enterprise (*a business*) must be able to read, write, account, and must be a tolerable judge too of perhaps, fifty to sixty different sorts of goods, their prices, qualities, and the market where they

[3] The earliest theories and studies made no distinction between business ownership, entrepreneurship and self-employment, so one has to review the earliest literature under the general umbrella of "business ownership" and formal education.

are to be had cheapest." (Smith and Garnier, 1845). This example shows that the business owner needs a modest amount of education to function profitably.

While the media sometimes provide folkloric examples focusing on the "high-school dropout" who reportedly made it big in the business world armed with an education from the "school of hard knocks", this indeed happens infrequently (Robinson and Sexton, 1994). The capability of the self-employed is usually represented by two main components, which are 'entrepreneurial ability' and 'access to finance' (Evans and Leighton, 1989a). Entrepreneurial ability is a very wide term that refers to the aptitude of individuals to recognize and exploit business opportunities in a form of arbitration; this relates to concepts such as imagination (Shackle, 1979), alertness (Kirzner, 1973) and a knowledge of the market (Jovanovic, 1982).

Entrepreneurial perception and awareness is further heightened by greater access to information and an ability to analyse information critically and for profit. Therefore business contacts[4] (McGuire, 1976), social capital (Estrin et al., 2013) and - specifically for the purpose of this thesis - 'education' (Schultz, 2002) become important attributes; and one would expect them to influence productivity positively (Burke et al., 2002). In this way, educational attainment should have a positive relationship with business ownership.

Furthermore, according to theoretical models by Lucas Jr (1978) and Leibenstein (1968); individuals with greater "entrepreneurial ability" (say "X") enter into entrepreneurship. "X" enters the entrepreneur's cost function in a negative manner and their production function in a positive manner. The question then is whether "X" can be a proxy for educational attainment; here the literature branches out into two different strands.

[4] For comprehensive reviews on social capital and business formation, see PARKER, S. C. 2004. *The economics of self-employment and entrepreneurship*, Cambridge University Press, ESTRIN, S., KOROSTELEVA, J. & MICKIEWICZ, T. 2013. Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing,* 28**,** 564-580.

On the one hand empirically, Robinson and Sexton (1994) find in Canada that general education has a strong positive influence on becoming self-employed and on success in business. Keeble et al. (1993) report in the UK that many opportunities for the self-employed exist in knowledge-based industries (e.g. accounting, law and art) and greater levels of education should promote self-employment because more educated individuals are better informed about business opportunities. This view is supported by Van der Sluis et al. (2008) who found that the effect of schooling on business performance was unambiguously positive in a meta-analysis of 69 studies in developed countries (although the impact of education on selection into business ownership was insignificant).

Lazear (2004) also reported that business owners were very likely to be "jacks-of-all trades" because they were found to take a more diverse set of educational courses than their colleagues who went into paid employment – this might be explained by arguing that the "wider variety of more generalised" courses helps the potential business owner by endowing him/her with a wider array of knowledge. Conversely, paid workers might need thorough and specialised education so as to be professionals in chosen fields e.g. a typical gynaecologist or a mathematics professor will need significant formal education, while business owners might not need such specialised knowledge and could decide not to acquire such education (Parker, 2004).

In general, this school of thought argues that business owners will need to have a broader range of skills than paid workers to be able to cope with the various challenges of a business[5]. In the Nigerian (developing country) context however, where there may be a lot of push/necessity self-employment according to the traditional labour theory of Harris and Todaro (1970), education may also have a positive relationship with paid work, as individuals look to receive higher returns on

[5] Leading to a claim that entrepreneurs are generally "Jack of All Trades" by LAZEAR, E. P. 2004. Balanced Skills and Entrepreneurship. *The American Economic Review,* 94**,** 208-211.

their human capital investments in paid work than they might gain from business ownership with low returns in an economic environment that could be harsh for business.

On the other hand however, Casson (2005) argues that skills that are used by good business-owners are not likely to be found in formal education but by partaking in real life businesses and apprenticeships. This school thus argues that business owners are not likely to possess high educational attainments, because they do not need a formal education, but instead require real life business training.

Van der Sluis et al. (2008) also talk about a "Bill Gates" (Drop Out) effect; in their analysis, college drop-outs were significantly more likely to be self-employed. They also found that in developing countries, more educated workers typically end up in wage employment and prefer non-farm entrepreneurship to farming (thus less educated individuals were engaged in non-farm business ownership). As pointed out earlier, Nigeria being a developing country offers an interesting scenario. This is because while education could serve as a catalyst for the self-employed to 'escape' push self-employment and get into the formal paid jobs market, education might also give potential business owners the skills they need to thrive in the business environment, thereby also making it more likely for individuals with high educational attainment to opt for self-employment.

Other research has focused on the effect of education on business ownership motivation. Maloney (2004) suggests that the size of the self-employed workforce in Mexico, Brazil and Argentina seems to diminish with more years of schooling. Parker (2004) and Le (1999) are of the opinion that the relationship between education and self-employment is likely to depend on the econometric specification used; although they also agree that as education attainments increase, the probability of being self-employed falls. Demirgüc-Kunt et al. (2009) reported that having a low level of education is not quite conducive for entrepreneurship and business ownership in the real sense of the word.

The prevailing view seems to be that some education is needed for business owners, but not so much that the opportunity cost tied to education is too high, as then prospective entrepreneurs might decide to find compensation in the labour market through paid jobs. The literature also agrees that business owners should have sufficient knowledge about the field they are engaged in, even though some business owners can hire specialists and advisers to supplement their knowledge.

Van Praag (2003) examined young white self-employed men in the US and showed that self-employment performance was significantly enhanced by schooling, giving evidence of pull effects for education and self-employment in a developed country. However, a meta-analysis also conducted by Van der Sluis et al. (2005) on developing countries showed that OLS estimates underestimate the self-employment returns to education; and that while this is lower in developing countries than developed countries, it is quite significant. This study found that returns to education were estimated at 5.5% for each additional year of schooling for self-employment and 6.1% for paid work, showing that more educated individuals were better off in paid employment. The researchers also reported that for developing countries, additional education reduced the likelihood of being in self-employment, giving support for the push kind of self-employment in developing countries.

The literature on developing countries thus far seems to indicate that formal educational attainments have a negative relationship with self-employment (Blau, 1985, Van der Sluis et al., 2005, Robinson and Sexton, 1994). The consensus is that since the costs of acquiring a formal education in developing countries are so high, individuals might seek to maximise their returns and such investments in human capital by opting for wage/paid work. These studies seem to indicate that since a prerequisite for being qualified for wage sector jobs is a formal educational qualification, such as a degree e.g. a BSc, MSc or HND in a relevant field for the job, the probability of having a wage job increases with higher educational attainment: while conversely, the probability of being in self-employment falls as educational attainment increases. This

therefore suggests that individuals in self-employment in developing countries will probably be those with low educational attainments, who have been forced/pushed into such lower paying jobs, as they do not have the level of educational attainments to seek paid jobs.

The literature predicts that more educated individuals in developing countries are less likely to be in self-employment than in developed countries (Van der Sluis et al., 2005). Coupled with the Harris and Todaro (1970) theory that the self-employed in developing countries are a disadvantaged group, the expectation would be that the self-employed individuals in Nigeria will be uneducated people who have been *pushed* into self-employment because they have low educational skills/attainments. More educated individuals would be found in paid work, where they can make higher returns on the investment in their human capital. Also, formal educational degrees are prerequisites for a majority of paid jobs in developing countries such as Nigeria - so those with significant amounts of formal education are expected to be in paid-employment.

This thesis also recognizes the opportunity for an empirical investigation to explore the relationship between occupational status and education from a micro-level perspective in a developing country, and to make the vital distinction between employers, paid-employees and own account workers. As stated earlier, Earle and Sakova (2000) argue that on the one hand, a self-employed worker may be a successful business owner exploiting new opportunities and inventing new products, production processes, and distribution methods. On the other hand, self-employment status may result from forced recourse to a residual sector in which the individual's activities and income differ little from those in unemployment.

Based on this they argue that the employers are clearly genuine business owners/entrepreneurs because *employers are creating jobs for others*. Tamvada (2010) also reports that employers enjoy higher welfare, in terms of adult equivalent household consumption levels, than both paid workers and self-employed "own account" workers. This thesis thus makes these occupational distinctions (employer, paid worker and self-employed "own account") when investigating the relationship

between employment statuses and education – a view not previously found in the developing country literature.

The unemployed as a collective category are expected to be uneducated and unskilled, although in developing countries including Nigeria, self-employment and farming can be a last resort (Jolly et al., 1973), while those not in the labour force could have an ambiguous relationship with educational attainments, as it is not clear who these individuals are and why they have decided not to enter the labour market. For example, they could be full time housewives/care-givers or individuals who have simply quit the labour market for differing reasons. It is however expected that they too will report lower educational attainments than paid workers, since it would be irrational to make educational investments and not seek to recoup especially in developing countries where the opportunity costs of education are very high (Fields, 2013, Fields, 1980).

In summary, from the existing research and literature, we would expect those in self-employment, the unemployed and individuals not in the labour force to have lower educational attainments when compared to those who are in paid work. We are not sure what to expect from employers at this point; the first empirical analysis at this stage will thus aim to answer the question; "How do educational attainments affect the probability of holding any of the employment statuses in a developing country?"

2.4.1 LABOUR FORCE PARTICIPATION AND LABOUR WAGE/INCOME

This section of the literature review will focus on the relationship between labour force participation and labour wage/income as it currently exists in the labour force participation literature.

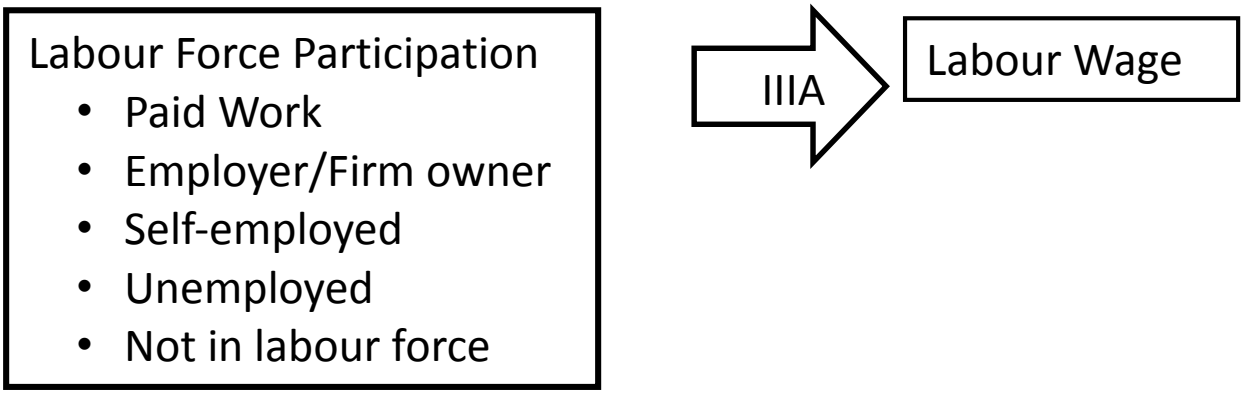


Figure 6: Conceptual Model (Labour Force Participation and Labour Wage/Income)

Closely related to the problems of 'employment' in developing countries is the question of income distribution, in the sense of how much income different occupational groups of the population receive (Jolly et al., 1973). In other words, "How does having any particular employment status affect income?" This is a major gap in the literature that this thesis hopes to contribute to filling.

As stated earlier, a very important conventional fact is that in developing countries, self-employment is increasingly viewed as an alternative to paid employment, serving as an option facing both the potential entrant into the labour market and the unemployed (Maloney, 2003, Rees and Shah, 1986). Thus individuals in developing countries could choose not to accept the patterns of work opportunities and the prospective labour wage offered by the labour market and resort to working on their own; the other alternatives would be unemployment and not belonging to the labour force.

This thesis is also timely and relevant to the current debate, because unlike traditional economic labour market models that assume that self-employment is synonymous with poverty in developing countries (Harris and Todaro, 1970), recent studies show that self-employment in developing countries is an employment option that individuals choose: for non-pecuniary reasons in the view of Maloney (2004) and for pecuniary reasons (Mohapatra et al., 2007, Yamada, 1996). In other words, there is the possibility that people may be pulled towards (or be attracted to) self-employment in developing countries on account of non-pecuniary and pecuniary factors.

This thesis focuses on pecuniary factors relevant to employment; and consequently for the second empirical analysis, the thesis investigates how holding any of the employment statuses affects the labour wage of individuals. Labour wage or income received from work is the dependent variable in this analysis as the thesis aims to investigate if belonging to any of the occupational statuses can induce a labour wage premium or penalty. Since the unemployed and those not in the labour force do not earn labour wages, they are not directly involved in the second part of the study[6].

For the second empirical analysis investigating labour wage, the thesis begins with the well-known employment models of Lewis (1954) and Fei and Ranis (1964), who posit that the developing economy comprises two sectors – the agricultural, subsistence sector characterised by surplus labour; and an industrial, modern sector into which labour from the agricultural sector is gradually transferred. Both transfer and labour absorption in the modern sector take place over time and the model assumes two things: surplus labour in the rural sector and constant real wages in the urban sector.

[6] In developing countries, including the one investigated in this thesis, unemployment benefits are virtually non-existent. Unemployed individuals typically either resort to some sort of petty self-employment to subsist or may rely on charity/handouts from relatives and family members. Unemployment as it affects individuals in developing countries will be discussed in detail later in the thesis.

As the transfer of labour proceeds, unemployment (or underemployment) will be reduced as employment in the modern industrial sector increases, until the point where surplus labour in the rural areas disappears. In reality, the typical situation in developing countries has been for urban wages to rise considerably, both absolutely and relative to rural living standards, even in the presence of open unemployment (Jolly et al., 1973, Fields, 2013).

The elements of these models have been modified into the now famous **Harris-Todaro model** (Harris and Todaro, 1970). This model was developed to fit the context of East Africa by John Harris and Michael Todaro. According to this model, there are certain events that occur as developing countries move to self-sustaining growth. The starting point posits that in order to be hired for a formal wage sector job, it is necessary for individuals to be physically present in the urban areas where such jobs are located. As workers search for more jobs than there actually are, employers will hire some of them (but not all of them). Those not hired end up unemployed ex-post: thus open unemployment is possible. The Harris-Todaro model is discussed next.

2.4.1.1 THE HARRIS-TODARO MODEL

The Harris and Todaro (1970) model proceeds as follows. In essence, employers in the formal sector hire workers until the point where the marginal product of labour equals the wage rate in the formal sector $\overline{W}_F$. On the other hand, in the informal sector made up of the self-employed, unemployed and agricultural workers, there is assumed to be free entry; thus all people who wish to work in the informal sector may do so. Each person employed in the informal sector earns a wage $\overline{W}_I < \overline{W}_F$. Workers are thus assumed to consider the mathematical expected wages from each of two search strategies:

a) Searching for a formal paid job, which pays a relatively high wage but runs the risk of unemployment, or
b) Taking an informal sector occupation, which offers a lower wage but has no risk of unemployment.

The insight of this model was that workers would be expected to allocate themselves between formal and informal sector search strategies so that the expected wages from the two strategies are equalized: $E(W_F) = E(W_I)$.

Thus the wage equilibrium condition becomes $\overline{W}_F \frac{E_F}{L_F} = \overline{W}_I$, where E_F is employment in the formal sector and L_F is labour force in the formal sector.

Because $\overline{W}_F > \overline{W}_I$, it follows that $\frac{E_F}{L_F} < 1$. This means that the formal sector labour force exceeds formal sector employment, and hence individuals who cannot get jobs in the formal sector will be forced to join the informal sector. This model thus implies that the self-employed,

those in the agricultural sector and all individuals in the informal sector[7] will be worse-off in terms of earnings compared to individuals in wage employment[8].

The model thus has the policy implications of encouraging formal sector employment creation and rural sector development in order to create jobs for the unemployed, and also of creating rural sector opportunities to stop rural-urban migration in the first place. Indeed when the model was first published, the government of Kenya carried out an integrated rural development programme and unemployment in the country fell. This model has been extended to allow for on-the-job search from rural agriculture, preferential hiring of better-educated individuals, employment fixity, duality within the rural sector, mobile capital, endogenous urban wage setting, risk aversion, a system of demand for goods and other relevant factors (Fields, 2004).

However, following this Harris-Todaro model and other theoretical work by Ranis and Fei (1961), Fields (1990), Lewis (1954) and particularly Stiglitz (1976), who also develops a model of segmentation and hierarchy in wages for different sectors and in different employment categories showing that the self-employed should earn lower wages, it is assumed that the self-employed are worse-off in the labour wage hierarchy relative to paid workers (Tamvada, 2010, Günther and Launov, 2012, Jolly et al., 1973, Fields, 2013). Indeed empirical studies conducted by Bosch and Maloney (2010), Bromley (1978), Chen and Doane (2008) and Tokman, (1992) seem to point in this direction; and the literature on developing countries traditionally classifies the self-employed as a distressed residual group of people rationed out of formal sector jobs who should report lower labour wages compared to paid workers (Tamvada, 2010, Bargain and Kwenda, 2011, Gindling and Newhouse, 2012, Maloney, 2003).

Empirically, several studies find a negative earnings premium, called an 'labour wage/income penalty', for self-employment; and these include research by Jhabvala et al. (2003) in India, Gong

[7] And also unemployed.
[8] Especially Formal Wage Employment.

and Van Soest (2002) in Mexico, and Loayza (1996) with Tokman (1992) in Latin America. This literature has also been used to show that the self-employed in developing countries are in a negative position when to compared paid workers.

However other recent studies have shown that those in the informal sector, and specifically for our study purposes the self-employed, might actually be advantaged compared to formal sector workers – a view based on two strands of literature with two bases. The first school founds its arguments on a combination of non-pecuniary grounds, combined with the observable characteristics of self-employed individuals compared to wage workers, while the second school has purely monetary grounds for challenging the traditional Harris-Todaro strand of literature. The core question on self-employment in emergent countries now is the following: "Do self-employment individuals choose to work in this sector to earn competitive wages and commensurate returns to their abilities, or do they stay self-employed for the reason that they have no better option and are essentially waiting for paid employment?" (Pietrobelli et al., 2004).

To contribute to this literature, Cunningham and Maloney (2001) investigated the Mexican work-force using factor and cluster analysis techniques to detect unobserved heterogeneity in the informal sector. They found different clusters of the self-employed, some who were arguably better-off compared to paid workers and others who were not. Günther and Launov (2012) develop an econometric model, where they assume that the formal sector is homogenous but the informal sector can be heterogeneous. They then develop an econometric model using the Heckman (1979) technique on a general household survey from Cote d'Ivoire. They reported that 55.2% of the informal labour market in the country were voluntary workers who self-opted for these occupations, and they are predominantly found in the higher-paid informal sector. Bosch and Maloney (2010) notably used a Markov process on panel data from Argentina, Brazil and Mexico to find that a substantial part of the self-employed workforce corresponded to voluntary entry.

Maloney (2003), in a study of workers in Argentina, Mexico, Brazil and Chile, makes theoretical contributions to developing countries in general and gives a wide range of motivations why workers might want to be self-employed, ranging from higher earnings compared to formal paid work to non-pecuniary benefits. Fields and Pfeffermann (2003) find in a collection of developing countries that self-employment is a viable route out of poverty and can help individuals live "successful" lives in terms of overall well-being. Studies from other developing countries have also focused on other non-wage features of the informal sector, where individuals maximise their utility rather than their earnings (Maloney, 2004). Likewise other studies indicate that workers might have a comparative advantage in one sector or employment status and hence would not do better in any other (Gindling, 1991, Bosch and Maloney, 2010, Pratap and Quintin, 2006, Rosenzweig, 1988, Cunningham and Maloney, 2001).

Some studies also report that the informal sector made up predominantly of self-employed workers in developing countries might not be homogenous (Guha-Khasnobis et al., 2007, Paulson and Townsend, 2004, Günther and Launov, 2012). For instance Fields (2004) reports that the informal self-employment sector is made up of two distinct parts, consisting of an "upper" and "lower" tier. The upper tier consists of individuals who voluntarily enter this sector because given their characteristics, they expect to earn more in the informal self-employment sector than they would earn in the formal paid sector; while the lower tier is made up of individuals who actually expect to earn less in self-employment than they would in paid work, but such individuals have no choice but to persist in self-employment despite these expected lower earnings/income levels.

However, studies drawing on this empirical view of heterogeneity in developing countries are very few, to the best of this researcher's knowledge (Cunningham and Maloney, 2001, Günther and Launov, 2012, Tamvada, 2010, Bargain and Kwenda, 2011). Cunningham and Maloney (2001) in particular made use of cluster analysis to find 6 clusters of the self-employed in Mexico; they reported that 70% of these individuals voluntarily entered into this self-employment and 2 of the 6 clusters were actually advantaged compared to paid workers.

Some researchers have found outright that the self-employed actually have better or comparable incomes when contrasted with paid workers. For instance, Hart (1973) found that the self-employed in Ghana had comparable and sometimes higher incomes than paid workers. Magnac (1991), also found some proof of wage comparative advantage in self-employment for women in Colombia. As this part of the literature is very inconclusive and volatile, the estimations performed by this thesis on employment/occupational status and labour wages will focus for the first investigation on the relative premiums or penalties in self-employment earnings compared to paid workers and will attempt to investigate if individuals in self-employment actually have premiums or penalties in labour wages when compared to paid workers.

An important addition to the literature and one important for this thesis involves the findings of Earle and Sakova (2000) and recently Tamvada (2010) who argue that "employers" belong to an employment category distinct from self-employed "own account" workers as described in the self-employment literature. For this reason, this thesis will also make a distinction between employers, paid workers and self-employed "own account" workers when carrying out all empirical analyses: an empirical and theoretical assessment much needed in the developing country literature. After the first empirical analysis, the second investigation thus asks the question: "How does holding any of three labour wage earning employment statuses (employer, paid worker or self-employed "own account" worker) affect labour wage in a developing country?"

2.4.1.2 THE OCCUPATIONAL CHOICE DECISION

Parker (2009) summarizes different models of occupational choice where individuals work for themselves and trade-off risk and rewards (of loss and profit), rather than opting for the safe returns (of labour wage) in paid employment. In line with these theories, some authors provide static models, whereby risk-neutral agents choose between working in paid employment for a wage "$\boldsymbol{W}$" or working for themselves and producing output independently and earning "$\boldsymbol{\pi}$" (Johnson and Darnell, 1976, Banerjee and Newman, 1993, Parker, 2009). Workers are expected to choose the employment position with the highest returns between "$\boldsymbol{W}$" and "$\boldsymbol{\pi}$" (like the relationship expressed in Figure 3). These models can be extended to accommodate abilities in the case of Lucas Jr (1978) or risk aversion in the case of Kihlstrom and Laffont (1979), whereby agents with higher abilities or lower risk aversion will choose to work for themselves rather than be engaged in paid work.

Jacobs (2004) propounds that since human capital endowments are varied, workers will choose which employment sector (paid work or self-employment) to enter into depending on their preferences and expected incomes. Some studies have thus attempted to link earnings and employment exclusively[9]. Bernhardt (1994) in a Canadian study found that comparative potential earnings were the dominant determinant of the occupational choice for individuals. In the US, researchers reported that returns to self-employment relative to paid work earnings were central themes in the reason for occupational choice (Brock and Evans, 1989, Evans and Leighton, 1989b, Lofstrom, 2009).

In the UK, Rees and Shah (1986) found a positive selection bias in observed earnings, such that the probability of self-employment depended positively on the earnings difference between self-employment and paid work, and that education and age were significant determinants of self-employment. Taylor (1996) also found that individuals were attracted to self-employment because

[9] Chapter 4 of this thesis adds to that literature by specifically performing an inquiry to investigte the relationship between employment status and labour wage via the estimation of labour wage premiums/penalties for employed workers.

of higher expected earnings relative to paid employment and by the freedom from managerial constraints that it offered. Earle and Sakova (1999) in their study of six eastern countries, further reported that the estimated self-employment earnings premium was positive and implied an increased probability of selection to self-employment. On the other hand some authors report in the US that most individuals who are self-employed "own account" workers have both lower initial and expected earnings, but might persist in self-employment for non-pecuniary reasons (Hamilton, 2000, Blanchflower and Oswald, 1990).

In Canada, Bernhardt (1994) found that in the occupational choice decision for white men relative potential earnings were the main determinant of choice between self-employment and paid work. The study also found that paid workers had higher potential earnings in both sectors but with a greater advantage for those belonging in the paid work category, thus confirming that workers are rational economic agents who will analyse which occupational choice will give them more labour wage and opt for the occupational choice with a greater earnings premium (the relationship expressed in Figure 3).

Taylor (1996) also approaches this gap in the literature by using a three stage utility maximization model to investigate the relationship for a sample of UK workers between self-employment and three variables: expected earnings, the desire for independence and the ability to find paid employment. His results indicated that individuals were attracted to self-employment because of the higher expected earnings relative to paid employment and by the freedom from managerial constraints the employment option offered: giving more evidence for the prosperity pull argument for self-employment and rationality in the occupational choice decision.

This finding is further supported by Rees and Shah (1986) who develop an econometric model that features simultaneous determination of employment status and earnings in the UK, allowing for self-selectivity. The estimation of their model allowed for the self-employment/paid work earnings differential and showed that there was a positive selection bias in the observed earnings of paid

work and more specifically for this thesis, the probability of self-employment or paid work depended positively on the earnings difference between self-employment and paid work.

Gindling (1991) reports that in Costa Rica many self-employed workers have self-opted for this employment choice for a variety of positive reasons, including but not limited to higher labour wages, a claim supported by Magnac (1991) in a Colombian study that finds some proof of wage comparative advantage for women in self-employment. Pratap and Quintin (2006) in an Argentinean study find no evidence of a formal wage employment premium – in fact sometimes the premium becomes negative, indicative of a penalty. Bosch and Maloney (2010) find in a South-American study covering Argentina, Brazil and Mexico that a substantial part of the informal sector, particularly the self-employed, corresponds to voluntary entry, although informal salaried work may correspond more closely to the standard queuing view, especially for younger workers.

De Wit and Van Winden (1989) utilized an endogenous switching model on Dutch data to find that the probability of self-employment also depended on the earnings differential between self-employment and paid work, confirming the theoretical models that link the employment decision with monetary earnings in terms of expected labour wages (the relationship expressed in Figure 3). A number of studies in the US also confirm these findings (Brock and Evans, 1989, Evans and Leighton, 1989b, Lofstrom, 2009). On the other hand, however, some researchers find the opposite in the US and report that most individuals who are self-employed "own account" workers have both lower initial and expected earnings: but these individuals persist in self-employment for non-pecuniary reasons, such as independence, better control over one's time and being one's own boss (Hamilton, 2000, Blanchflower and Oswald, 1990)[10].

[10] These findings are also supported by LE, A. T. 2002. Empirical studies of self-employment. *Journal of Economic Surveys,* 13**,** 381-416. who uses Australian, Canadian, Dutch, UK and US labour markets data and studies to show that self-employment is influenced significantly by factors such as individual abilities, family background, liquidity status[10] and earnings compared to wage/salary employment.

However, given the dissimilarities highlighted in the literature between developed and developing countries (Banerjee, A. V. and A. F. Newman; 1993), some researchers have attempted to address the disparity in welfare (comprising labour wage and household consumption) amongst workers in developing countries, often depending on employment status or formality/informality status. The idea that disparate wages are paid to workers in developing (and sometimes developed economies) has been incorporated largely without question into job search theory. Consequently, a whole class of theoretical models has arisen where workers are presumed to search among employers for the best possible opportunities primarily in terms of labour wages/incomes (Fields, 2004). Also, it is a conventional fact that developing countries have a larger percentage of workers in the informal self-employment sector than developed countries; this has given rise to the literature discussed below.

2.4.1.3 FORMALITY VS INFORMALITY

In relation to this inquiry, certain theories and sources from literature overlap and intertwine and some of the contrasts can be expressed as dichotomies; the first dichotomy is a clear one as it involves self-employment versus the paid work sector – the primary focus of this thesis. The second one involves the formal versus the informal sector. The distinction between self-employment and paid work is a clear one; self-employed individuals work for themselves and receive rewards for their labour, their physical capital and their entrepreneurial skill, while paid workers only get a reward to their labour and human capital - as determined by their employers and usually stipulated in contractual terms.

Informality, as it is described in the literature, happens when a business is not registered with the relevant governmental authorities. It usually assumes an evasion of taxes and government regulations, predicated by not registering with relevant government bodies for a host of reasons[11]; and can also occur in paid work when the employment contract is undocumented and the employer can raise or lower the employee's wage at any time; usually in such cases, either can terminate the contract at any time (Yamada, 1996).

In addition, the literature recognizes that individuals in self-employment in developing countries may choose to remain in the informal sector until they perceive that the benefits of becoming formal outweigh the costs – hence firm 'formation' does not necessarily mean firm 'generation' (Acs et al., 2008). In developed countries there are advantages to operating in the

[11] See: LOAYZA, N. V., SERVÉN, L. & SUGAWARA, N. 2009. Informality in Latin America and the Caribbean, PERRY, G. 2007. *Informality: Exit and exclusion*, World Bank Publications, MALONEY, W. F. 2004. Informality revisited. *World Development,* 32**,** 1159-1178, MALONEY, W. F. 2003. Informal self-employment: Poverty trap or decent alternative. *Pathways Out of Poverty.(Boston: Kluwer),* HEINTZ, J. & VALODIA, I. 2008. Informality in Africa: A review. *SIDA by the WIEGO Network, available online at: http://wiego. org/files/publications/files/Heintz-Valodia-Informal_Economy_Africa-2008. pdf (accessed 18 February, 2012),* BOSCH, M. & MALONEY, W. F. 2010. Comparative analysis of labor market dynamics using Markov processes: An application to informality. *Labour economics,* 17**,** 621-631.

formal sector, which include tax breaks and the possibility of getting additional business, contracts and jobs: such incentives are scarce in developing countries.

Furthermore in developing countries, there is the problem of how one measures entrepreneurship and separates the "entrepreneurs" from the "ordinary self-employed"? Unlike in developed countries, where available data can easily be analysed to differentiate 'true entrepreneurs' from 'petty traders', based on available data like number of employees in the firm, the business type and amount of working capital, such informative data are very scarce in developing countries. For example, a large scale business tycoon and a petty shop owner both hold some legitimate claim to being entrepreneurs even though they operate in different spheres.

The difference between formal and informal entrepreneurship is thus usually determined by registration status. If a firm has been registered with the appropriate government agency, then it is a formal entity that is authorised to do business; if not – then it is informal. The classification of a firm in the formal or informal category does not depend on the nature of its business activities or their externalities, but rather to its presence within the formal (taxable) sector or the informal sector (Desai, 2009). Firms are defined as formal because they operate in the formal economy: this does not provide any indication of the legality or illegality of their business activities. The size of the informal workforce may vary, but can reach more than fifty per cent in some countries according to the International Labour Organization (ILO, 2014).

In many developing countries, there are a few incentives for entrepreneurs to function in the formal sector as mentioned earlier, particularly if business operations are carried out on a small scale. Entering the formal sector can be a deliberate decision based on the trade-off between regulatory disadvantages such as taxes, and formalisation advantages like better access to export markets and credit facilities (Torgler and Schneider, 2007, Dreher and Schneider, 2010). Acs et al. (2008) found that business owners were less likely to incorporate except when they perceived that doing so would provide their business with benefits such as reduced taxes (e.g. shell companies) and avoidance of regulatory burdens (e.g. labour laws) or access to formal financing and labour contracts.

Furthermore, the incentive to register firms might be greater in developed countries than in

developing countries (Acs et al., 2008). As this researcher has pointed out above, being in the formal or informal sector does not in any way affect the legality of the business. It is possible for a formal business to engage in illegal activities and also for an informal business to engage in legal activities and both options allow businesses to partake in rent seeking (Baumol, 1990, Baumol, 1996).

For the purpose of this thesis however, it is interesting to note that a majority of the self-employed in developing countries are almost completely outside government control and are primarily found in the informal sector, as such countries usually concentrate their tax collection efforts on large national and multinational firms (Yamada, 1996). Hence the modelling of the informal sector and self-employment in developing countries is yet to be consolidated, even though certain researchers have made very valuable contributions that this thesis will draw on. Most theoretical models currently see the informal sector as the training and sorting mechanism for self-employed individuals who later become large scale "entrepreneurs", and also as the natural home of self-employed individuals (Yamada, 1996, Günther and Launov, 2006, Günther and Launov, 2012, Maloney, 2004, Fields, 2004).

Some studies even go as far as assuming that all the self-employment in developing countries is in the informal sector (Yamada, 1996, Fields, 2013, Gindling and Newhouse, 2012), and Yamada (1996) in his Peruvian study further reported that individuals who were doing poorly in the informal self-employment sector moved out to join the formal wage sector..

For the purposes of this thesis, it will suffice to mention that the self-employed are mostly found in the informal sector of most developing countries, even though quite a significant number of the self-employed can also exist in the formal sector depending on the economy and labour market characteristics of the country being investigated. In the data used in this study, it is not possible to distinguish between the formal and informal sector workforce of either self-employed or paid worker individuals. However, it is currently estimated that about 85% of the self-employed in Nigeria operate in the informal sector (NBS, 2014).

This thesis will concentrate on the most relevant literature that examines the differentials in the

formal-informal dichotomy. The Harris-Todaro (1970) model discussed previously is the primary model used in the self-employment literature for developing countries because it specifically makes predictions about the nature of self-employment in developing countries and also the informal sector in such economies. Its predictions have moreover proved to be largely correct even though it is being challenged by recent studies of which this thesis forms a part. To summarize once again, the Harris-Todaro model suggests that in developing countries self-employed workers will be worse off when compared to paid workers.

2.4.1.4 OPPOSITION TO THE HARRIS-TODARO MODEL

Recent studies have shown that those in the informal sector and - specifically for our purposes and study - the self-employed - might actually be advantaged compared to formal sector paid workers, based on two strands of literature. The first school bases its arguments on a combination of non-pecuniary grounds combined with the observable characteristics of the self-employed individuals compared to paid workers, while the second group in the literature has purely monetary reasons for challenging the traditional school of the Harris-Todaro (1970) model.

From the first school, Bosch and Maloney (2010) used a Markov process on panel data from Argentina, Brazil and Mexico to find that a substantial part of the self-employed workforce was associated with voluntary entry. Maloney (2003), in a study of workers in Argentina, Mexico, Brazil and Chile, makes a number of theoretical contributions relevant to developing countries in general and offers a wide array of motivations as to why workers might want to be engaged in self-employment, ranging from higher earnings compared to formal wage work to non-pecuniary benefits. Yamada (1996) also reports in a study utilizing Peruvian household data that individuals engage in informal self-employment by choice due to competitive earnings and other non-pecuniary benefits.

From the second school, Cunningham and Maloney (2001) investigate the Mexican work-force using factor and cluster analysis techniques to detect the unobserved heterogeneity in the informal sector. They find 6 clusters of the self-employed, some who are arguably better-off compared to paid workers and others who are not. Günther and Launov (2012) develop an econometric model where they assume that the formal sector is homogenous but the informal sector can be heterogeneous. They then apply an econometric model using the Heckman (1979) technique on a general household survey from Cote d'Ivoire and report that 55.2% of the informal labour market

in the country are voluntary workers who self-opted for informal self-employment and they are predominantly found in the higher-paid informal sector.

Combining both schools, Fields and Pfeffermann (2003) find in a collection of developing countries that self-employment is a viable route out of poverty and can help individuals live "successful" lives in terms of overall well-being. Studies from other developing countries have also focused on other non-wage features of the informal sector where individuals maximise their utility rather than their earnings; and such studies indicate that workers might have a comparative advantage in one sector of employment (either paid work or self-employment), hence they would not do better in any other choice of employment status (Gindling, 1991, Bosch and Maloney, 2010, Pratap and Quintin, 2006, Rosenzweig, 1988, Cunningham and Maloney, 2001).

2.4.1.5 UPPER AND LOWER TIERS?

A novel school of thought has recently risen in the literature, from researchers who report that the informal self-employed sector in developing countries might not be a homogenous group (Guha-Khasnobis et al., 2007, Paulson and Townsend, 2004, Günther and Launov, 2012). For instance, Fields (2004) reports that the informal sector is made up of two distinct parts: an "upper" and "lower" tier. The upper tier consists of individuals who voluntarily enter this sector because given their characteristics, they expect to earn more in the informal sector or self-employment than they would earn in the formal sector or wage-employment, while the lower tier is made up of individuals who actually expect to earn less but have no choice but to persist in self-employment.

However, studies empirically supporting this view of heterogeneity are very few, to this authors' knowledge (Cunningham and Maloney, 2001, Günther and Launov, 2012, Tamvada, 2010, Bargain and Kwenda, 2011). As Earle and Sakova (2000) and Tamvada (2010) argue that employers belong to an employment category distinct from own account workers (in the self-employment literature -a claim now being accepted in the labour force literature), this thesis will also make a distinction between employers, paid workers and self-employed "own account" workers when carrying out the labour wage analysis: an empirical and theoretical exercise it is suggested as being very much needed in the developing country literature. Perhaps 'employers' belong to the so-called "Upper Tier" and 'self-employed own account' workers belong to the "Lower Tier".

2.4.1.6 THE UNEMPLOYED AND NOT IN LABOUR FORCE

The evidence indicates that the main problems in developing countries are poverty and inequality, in which 'underemployment' might be more pervasive than open unemployment (Standing, 2000), so the relationship between occupational statuses, labour wage and unemployment might be more complex than originally thought.

Significantly, unemployed persons might decide to resort to disguised unemployment or underemployment in the self-employed sector in other to earn some sort of labour wage to survive, as there is currently no indication that developing nations can afford to provide unemployment benefits. Indeed, most members of the self-employed workforce in developing countries are assumed to be forced to be in disguised unemployment. This has led scholars to come up with the terms "pushed" and "pulled" self-employment.

Simply put, an individual is pushed into self-employment if it is not one's preferred choice, but one has been constrained by economic factors or necessity into being in self-employment. On the other hand, an individual is pulled into self-employment if one opts for it out of one's volition, either because of a perceived opportunity or some other attractive feature (Amit and Muller; 1995)[12].

Paralleling the push-pull self-employment debate in the 'entrepreneurship' literature is the "necessity-opportunity" entrepreneurship debate. Much like push self-employment, necessity entrepreneurs engage in entrepreneurial activities basically to avoid unemployment, whereas like pull self-

[12] Apart from the perceived negative connotations for pushed self-employment, Amit and Muller (1995) distinguished between pushed and pulled business-owners using a likert scale and showed that pull business-owners in Canada (a developed country) were more successful than push ones. However Solymossy (1997) and Dahlqvist et al (2000), in a study of Hungarian business-owners, conclude that the evidence is inconclusive about the link between 'push-pull' motivations and outcome.

employment, opportunity entrepreneurs start businesses to pursue a recognized opportunity for profit (Reynolds et al; 2002).

Block and Koellinger (2009) regard necessity entrepreneurs as those who have started businesses because they have no better choices of work. In other words, push/necessity factors take hold when an entrepreneur would rather be engaged in paid work but has had to opt for the current state of business ownership as the next best alternative; in this regard the position is quite similar to push self-employment. Pull factors on the other hand are related to opportunity entrepreneurs; they are those attractions that draw an individual into entrepreneurship voluntarily. In plain terms, push factors mean those influences that "push or force" individuals into entrepreneurship, pull factors on the other hand are influences that "pull or attract" individuals into entrepreneurship.

According to Desai (2009), necessity entrepreneurs make up an important part of the total set of entrepreneurs in developing countries because of the large pool of unemployed workers in developing countries, and they may be less common in developed countries. In support of this claim, Cowling and Bygrave (2002) reported rates of necessity entrepreneurship for Brazil, Argentina, India and Chile (developing countries) to be within the range of 6.5 % to 7.5 %, while the necessity entrepreneurship rates for Denmark and Finland (developed countries) were 0.33 % and 0.43 % respectively[13].

Labour market characteristics, self-employment rates and welfare indices are very disparate between developed and developing countries. Added to this, there could exist contextual differences between such countries, as well as micro and macro-economic indicator differences (World Bank, 2014). An investigation into push and pull self-employment in developing countries is therefore warranted and our analyses of labour wages will have implications for this; it is an investigation much needed for the literature on developing countries.

[13] Reynolds et al (2002) reported that across 29 countries participating in the 2001 Global Entrepreneurship Monitor (GEM study), necessity entrepreneurs constituted 43 % of all entrepreneurs and opportunity entrepreneurs 54 %, the authors also observed that opportunity entrepreneurs were more likely to be found among the older age group (35-44 years) and necessity entrepreneurs in the younger group (18-24).

2.4.1.7 PUSHED INTO SELF-EMPLOYMENT?

"Why does the current labour force literature on developing countries expect a lot of the workers engaged in self-employment in developing countries to be pushed into this occupational status?" The obvious starting point would be the traditional hypothesis of a negative relationship between the share of self-employed workers in the labour force and economic development performance (Kuznets, 1973, Kuznets, 1966). Also the Lucas traditional model of size distribution of firms shows that the average firm size is an increasing function of the wealth of the economy if the elasticity of substitution between capital and labour is less than unity (Lucas Jr, 1978).

These studies and models seem to suggest that self-employment has a negative relationship with economic development; and this view seems to be borne out in a good deal of the literature as several researchers have reported that developing countries have a higher proportion of self-employed workers. Also as GDP grew for most present day developed economies, the proportion of the self-employed workforce in such economies fell (Gollin, 2008, Parker, 2009, Smith et al., 2002, Charmes, 2009).

Furthermore, numerous studies and theories seem to suggest that self-employment in developed countries and developing countries might not entail the same conditions/implications, and that self-employment could be a less than desirable employment option in developing countries. For example, while only about 10% of workers in OECD countries report being in self-employment, surveys indicate that up to 70% of the labour force in developing countries are in self-employment (ILO 2014).

Evans and Leighton (1989b) showed some evidence of push factors contributing to self-employment when they highlighted the role of unemployment as a factor influencing new firm formation in the US; since theoretical models already predicted that unemployed individuals would opt for self-employment, the study supported that theory. Mason (1989) found that preceding the

1979 recession, the motivations for individuals to start businesses in the US were essentially pull factors such as market opportunities, financial ambition and new products. These motivations changed during the recession period, and individuals increasingly reported push factors, most significantly unemployment and job insecurity, as reasons for venturing into self-employment.

Ritsilä and Tervo (2002) used panel data models and micro-level data from Finland to find support for the push hypothesis by showing that unemployment is significant in new business formation, while Evans and Leighton (1990) reported that unemployment was linked with self-employment - again in the US. Meager (1992) also found a positive relationship between unemployment and self-employment in European Commission (EC) countries.

The current literature recognises that self-employment in developing countries has some distinct attributes that may improve the probability of personal success or increase the chances of failure in such business environments. For instance, on the one hand, there are more opportunities for the self-employed in their local markets: but there are also more economic and political risks and a heightened sense of business insecurity (Fields, 2013). Underdeveloped financial markets and limited sources of funding in developing countries also make it difficult to start viable businesses. Personal and family savings are by far the most common means of providing start-up capital as bank lending and venture capital are very limited in such countries (Lingelbach et al., 2005). There are also substantial differences in terms of infrastructure, human capital, market orientation, welfare and other economic indicators such as poverty, technology and growth (Bell and Pavitt, 1997)[14].

From the literature specifically linking self-employment, unemployment and labour wages in developing countries, Mandelman and Montes-Rojas, (2009) report that in Argentina, self-

[14] A detailed analysis of the differences between countries (developed and developing) as they affect self-employment can be found in studies by ACS, Z. J., AUDRETSCH, D. B. & EVANS, D. S. 1994. Why does the self-employment rate vary across countries and over time? : CEPR Discussion Papers, BANERJEE, A. V. & NEWMAN, A. F. 1993. Occupational choice and the process of development. *Journal of political economy***,** 274-298.

employment is unlikely to be as a result of an optimal and voluntary decision taken by high-skilled individuals who are pursuing optimal incomes. The motivation for views like this comes from the previously discussed literature, whereby authors provide a theoretical model which assumes a stagnant and unproductive informal sector that serves as a refuge for the urban unemployed and for new migrants who resort to self-employment (Harris and Todaro, 1970, Ranis and Fei, 1961).

Recall that those authors construct an explanatory model of developing countries' transition from stagnation to self-sustaining growth. A number of concepts evolve involving urban unemployment, rural-urban labour migration and the welfare implications of various policies. One of the salient presumptions is that if there is a higher minimum wage in the wage sector; those in the agricultural sector, the self-employed and the unemployed will be worse off.

Consequently, as regards developing countries, there is a large body of literature that views individuals in the self-employment sector as being pushed there due to their negative welfare, measured in terms of labour wage: this school is sometimes regarded as holding the pessimistic view. To buttress this point, Jhabvala et al (2003) propound that the informal sector[15] in developing countries, consisting chiefly of the self-employed, is a survival activity of the very poor and of disadvantaged workers who are typically unskilled and less educated. This view is further advocated by authors who classify this group as the "working poor", who engage in such activities to escape unemployment (Turnham and Jaeger, 1971, Squire, 1981, Fields, 1980, Lewis, 1954).

Gindling and Newhouse (2012) support the pessimistic view of self-employment in developing countries by reporting that the self-employed work for themselves and earn little, either because they have been rationed out of wage jobs or because they prefer the autonomy and flexibility of

[15] Self-employment is sometimes equated with working informally, but equating the two is not empirically correct. "Informal Employment" is thought to comprise those who are outside the protection and regulation of the state and it is difficult to seure data on how many of the self-employed are informal by this definition and how many are not. FIELDS, G. S. 2013. Self-Employment in the Developing World.

self-employment. For several years the dominant view has been that large numbers of self-employed workers in developing countries reflected the rationing of employment opportunities in the paid jobs/wage sector, due to regulations or efficiency wages that pushed wages above market clearing level (Fields, 2004, Tokman, 2007, De Mel et al., 2010).

This view is also supported by Leibenstein (1968), who propounds that self-employment in developing countries entails surmounting constraints imposed by a poor economy and infrastructure and is not opportunistic. Bromley (1978), in a meta-analysis that studied a group of developing countries, determined that self-employment in developing countries is an activity of the poor. Similarly, Gong and Van Soest (2002), in a Mexican study, found that self-employment is a sign of distress and is typically undertaken by the unskilled and less educated. Research in Latin-America also established that self-employment is a sign of economic failure and a status for the disadvantaged (Loayza, 1996, Tokman, 1992).

All these authors and studies seem to indicate that self-employment and labour wages are negatively linked in developing countries, and thus provide proof for pushed self-employment in developing countries. By virtue of being in self-employment as a negative reaction with regard to the labour market and paid work, individuals are seen to be in self-employment primarily to escape unemployment and the resultant zero labour wage.

2.4.1.8 PULLED INTO SELF-EMPLOYMENT?

Recently however the push view of the self-employed being a disadvantaged group has been challenged, as modern studies show that self-employment in developing countries may be a desirable employment option that individuals self-select and opt for due to a variety of reasons, some monetary and others non-monetary (Maloney, 2004, Bosch and Maloney, 2010, Bosch and Maloney, 2007). For example, Office (1972) found earlier in Kenya that many individuals choose to be self-employed for a variety of reasons: many of them being beneficial when compared to paid employment, although a lot of these reasons were non-pecuniary.

In addition, Mohapatra et al. (2007) concluded that self-employment in rural China showed features of a productive small business sector and not a stop-over for disadvantaged individuals; while Fields and Pfeffermann (2003) showed from a group of developing countries that self-employment was a viable route out of poverty and could help individuals live "successful" [16] lives; Balán et al. (1973) showed that in Mexico, self-employment was seen as a desirable employment option, albeit for non-monetary reasons.

To recap, according to the economic literature, 'pull factors' have optimistic connotations and they attract individuals into self-employment. They include increasing demand for entrepreneurial activities/products, higher wage rates and higher returns for the self-employed both in monetary and non-pecuniary terms; the phenomenon is also referred to as "opportunity driven self-employment". 'Push factors' on the other hand are characterized by negative connotations like unemployment, getting fired and job dissatisfaction. In this case the individuals might persist in self-employment despite lower returns simply because there is no other viable alternative; this position is also sometimes referred to as "necessity self-employment"[17].

[16] Success was measured in this study in terms of escape from poverty (labour wages) and general wellbeing.
[17] Paralleling the entrepreneurship terminology.

In relation to this inquiry, Johnson and Darnell (1976) start from the premise that new-firm formation implies a movement from paid employment/work (or unemployment) to self-employment. They suggest that the decision will be made when the perceived net benefits (pecuniary and non-pecuniary) of self-employment (P_s) exceed those of remaining in paid employment (P_e). This gives rise to the relationship expressed in Figure 7(a). A fall in P_e, P_s remaining constant, will "push" a latent or potential entrepreneur into self-employment. On the other hand, a rise in P_s,,P_e remaining constant, will have the effect of "pulling" an individual into self-employment; as the perceived net benefits of self-employment exceed those of paid employment expressed in Figure 7(b) (Harrison and Hart, 1983)[18].

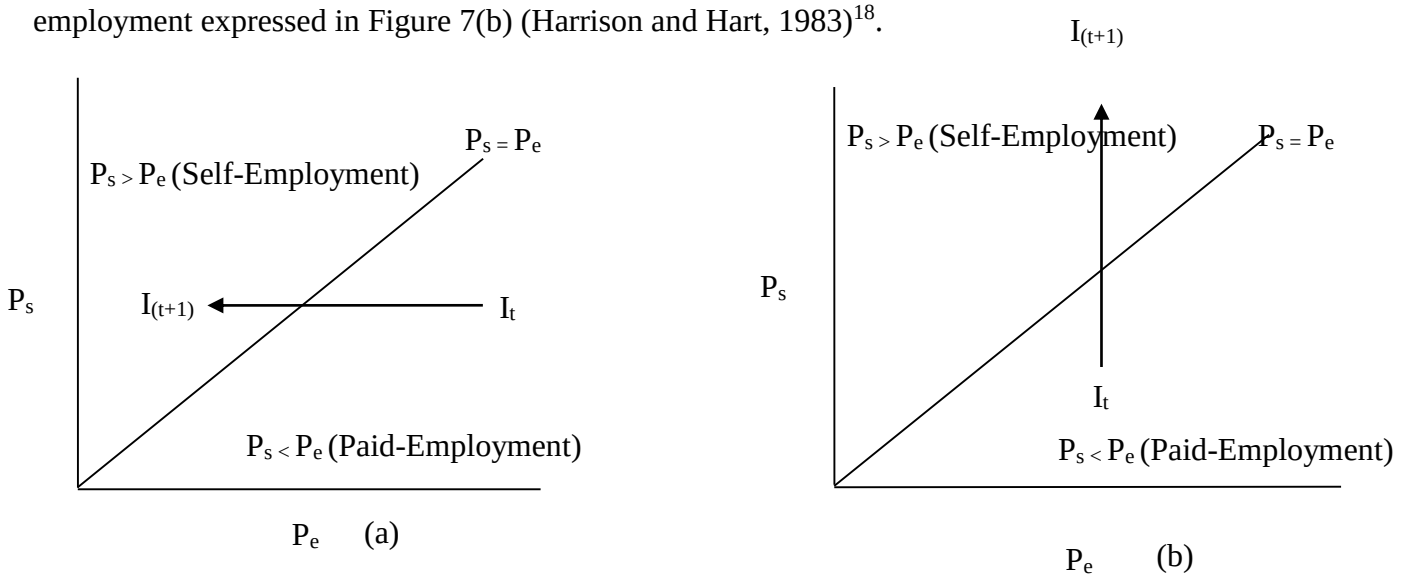


Figure 7: The Process of New Business Formation. (a) Effect of a fall in P_e, P_s remaining constant (Push); (b) effect of a rise in P_s, P_e remaining constant (Pull). I_t is the position of the individual potential founder in time t; $I_{(t+1)}$ is his position in time (t+1). Source: (Harrison and Hart, 1983).

Consistent with research about self-employment rates, a considerable number of researchers also identify push and pull factors as reasons why individuals could be in self-employment (Hakim,

[18] This theoretical framework would mean that in terms of welfare (P_e or P_s), if the self-employed are observed to enjoy net remunerations exceeding that of paid-employees ($P_s > P_e$), they are most likely to be "pulled" into-self-employment. On the other hand however, if paid-employees are observed to be experiencing net rewards surpassing those of the self-employed ($P_e > P_s$), those who persist in self-employment could be described as being "pushed" into it; and then comes the question whether they persist in such employment due to non-pecuniary reasons.

1989, Harrison and Hart, 1983, Gilad and Levine, 1986, Oxenfeldt, 1943). A push factor would occur when a defensive reaction in relation to the state of the job market and/or personal difficulties is the reason for going in self-employment e.g. unemployment. In contrast, pull factors arise from a proactive scheme, in which case initiatives are more likely to come from strong professional and/or personal ambitions possibly stemming from the identification of a market opportunity e.g. the identification of a service/product that can be used for profit[19]. This implies that the self-employment rates in countries could be generated as a result of these two factors; and indeed the literature has proceeded to group the self-employed into pushed and pulled categories, with the self-employed in developing countries traditionally viewed as being pushed into self-employment primarily due to the high unemployment rates in such economies.

[19] Such activities must not be rent seeking in nature or organized crime; these kind of activities are termed destructive or unproductive entrepreneurship by BAUMOL, W. J. 1990. Entrepreneurship: Productive, unproductive, and destructive. *Journal of political economy***,** 893-921.

2.4.1.9 THE UNEMPLOYED AND NOT IN LABOUR FORCE VS LABOUR WAGE

As this thesis has sought to highlight, the situation might not be so obvious in developing countries, as regards unemployment, not belonging to the labour force and the relationship with labour wage. In developing countries that typically provide no unemployment compensation, the only people who can refrain completely from work are those who are supported in some way by others[20]. This could lead to overcrowding in low-productivity sectors (or self-employment) by people who need to gain some sort of labour wage. In developed countries, such individuals would remain unemployed and be entitled to unemployment benefits or compensation. However, most developing countries can neither afford nor administer extensive schemes to redistribute income (Morse, 1970).

Unemployment in the strict statistical sense refers to a situation where an individual has no substantial source of earned income, is looking actively for work, will accept work at the going wage and has been unable to find work. In the last resort, the real tragedy of those without jobs is the poverty into which they slip, and which they share with all those with very low incomes; hence they are likely to resort to low income self-employment to escape such poverty (Jolly et al., 1973).

As is standard in the literature and for the purposes of this thesis, "individuals not in the labour force" will include persons who are either unwilling or unable to engage in productive activities for various reasons. Hence it will not include individuals below 16 years and those above 65 years (the legal working and retirement ages in Nigeria); neither will it include individuals in the military or any institutionalized people. However, it will include anyone who is of employable age, is unemployed and actively or inactively seeking work. Individuals unemployed and still seeking work will be classed as 'unemployed', while individuals who are unemployed and not seeking

[20] Or individuals with substantial savings.

work will be classed as 'not in the labour force' (e.g. homemakers and marginal workers); this group is collectively referred to as the "non-active labour force"[21].

The unemployed as a collective category exist at the margins of society in many developing countries. While their political power has considerable potential, economically, they are disadvantaged due to the fact that most of the unemployed are unskilled and thus cannot readily be placed in employment; although in many African societies, including Nigeria, farming has always been a last resort and can also provide a means of livelihood (Jolly et al., 1973).

In the rural areas of many developing countries, there could be unemployment as a result of landlessness or the low intensity of land use, while in the urban areas there could be unemployment of very disparate kinds. Some of the unemployed in the urban areas could be those who have recently moved to the town (urban regions) from the rural areas in search of jobs that they have not yet found; another set of the unemployed consists of individuals who have lived in the urban areas for a long time but who have not found work, and these include individuals who have little or no advanced education and individuals with no education at all who simply cannot find paid work (Morse, 1970).

Individuals with certain characteristics – lack of educational qualifications, problematic social status (where there is a bias), physical or mental challenges, old age, marginal ethnicity, gender (where there exists a bias) and religious status (if there is also a bias), might have higher or lower probabilities of being unemployed compared to other individuals, depending on the market characteristics and context of such countries (Standing, 2000). To address these contextual issues, this thesis also investigates these relationships, since Nigeria has the archetypal features of a developing country where the associations of these characteristics sometimes occur.

[21] These issues are dealt with in Section 4.10 and are highlighted in Table 6.

Since wealth in terms of labour wage/income is conferred by occupational status, it can be argued that the unemployed and those not in the labour force will be disadvantaged in terms of labour wages when compared to other occupational categories; and typically they report labour wages of nil except for monies that they can perhaps acquire through charity, begging, from friends, or from illegal or undocumented activities, etc. (Indeed unemployed individuals have reported labour wages of nil/zero in the data that will be used for the empirical analyses).

2.4.1.10 INVOLUNTARY UNEMPLOYMENT AND THE RESULTANT SELF-EMPLOYMENT

This thesis also draws on the work of Dasgupta and Ray (1986) as regards their explanation for involuntary unemployment in developing countries. Even though the main concerns of these researchers were inequality, malnutrition and unemployment in developing countries, they asked; "Why some individuals in developing countries do not get employed and earn a wage– and thus become unemployed?" While other authors have argued that this is because such individuals live in economies that are resource-poor[22], Dasgupta and Ray (1986) propound that this must be an incomplete answer because "Some do escape unemployment and get paid jobs while others, who are similar in all other respects do not." In other words, "the labour market often does not clear in such economies and the non-clearance manifests itself in the form of voluntary unemployment."

Dasgupta and Ray (1986) thus defined involuntary unemployment as that which arises because an "individual cannot find employment in a market which does employ a person very similar to him/her and if the latter person by virtue of his/her employment in this market is better off than the unemployed." This definition is helpful for investigative analyses and is practical for the empirical analyses conducted by this thesis, since the thesis is trying to investigate the differences in labour wage and household consumption that result from different occupational statuses.

Consider that the labour market in developing countries is heterogeneous and does not clear; furthermore individuals get to be employed due to capabilities, entitlements or endowments in terms of education, social networks, age, gender etc. A positive fraction of the population of the labour market is thus employed while the rest are kept out. Since production enterprises are profit maximising and each person aims to maximise his/her labour wage given his/her "entitlements", production enterprises will seek to employ individuals who can signal superior entitlements when compared to other individuals who have applied for the same job. This way, theory would expect

[22] And this itself is an object of contention.

those individuals with superior entitlements to get jobs while other individuals will remain unemployed voluntarily.

This theoretical model further helps with this thesis because it is possible to additionally postulate that individuals who do not get employed should be worse off in terms of labour wages and household consumption compared to those who do get employed; and indeed a majority of the literature from developing countries regards the self-employed individuals in developing countries as those individuals who have not been able to get jobs in the paid employment sector and have had to resort to self-employment involuntarily, to escape the consequent unemployment; thus they have been pushed into self-employment.

Another related and relevant theoretical model that can help with involuntary unemployment in developing countries comes from Sen (1983), in defining exactly what "entitlements" are (Devereux, 2001). Entitlements have been defined by Sen (1983) as "the set of alternative commodity bundles that a person can command in a society using the totality of rights and opportunities that he or she faces". In other words, "a person's "entitlement set" is the full range of goods and services that he or she can acquire by converting his or her "endowments (assets and resources, including labour power) through exchange entitlement mappings."

In this case entitlements, or more specifically endowments, are those variables that have been identified in the top left hand corner of the conceptual model i.e. gender, age, marital status, economic sector, religion, local community acceptance and educational attainments; and the exchange entitlement mappings occur in the labour market where individuals can thus be paid workers, employers, self-employed (own account workers), unemployed, or not in labour force, based on their entitlements/endowments with implications for labour wage and household consumption.

It might be beneficial to note that the theoretical models by Dasgupta and Ray (1986) and Sen (1983) do not detract from the Harris and Todaro (1970) model in explaining involuntary self-employment, but they complement Harris and Todaro (1970). Indeed they all seem to point to one conclusion: that the labour markets in developing countries do not clear, leaving some individuals, probably the unskilled, less educated, entitled or endowed, with no jobs in the paid jobs sector and with consequent implications for labour wage and household consumption.

2.4.1.11 GENDER DIFFERENCES IN EMPLOYMENT

The literature has also recognized that gender differences might exist in the nature of employment/occupational status. Boden Jr (1996) reports that women are more likely than men to shoulder family-related obligations, especially child rearing: and there is evidence that this affects the female propensity to become self-employed (Boden, 1999, Caputo and Dolinsky, 1998). Also, women might experience some discrimination/bias in paid employment jobs (commonly called a "glass ceiling") and a gender inequality in terms of earnings has also been mentioned and documented in the employment status literature (Hughes, 2003).

Furthermore, Allen et al. (2007) found that in all but two countries – Peru and Japan- in a study that sampled a collection of developed and developing countries - participation rates of women in entrepreneurship were substantially lower than those of men. The study also found that some countries had up to twice as many as male entrepreneurs as female entrepreneurs, adding to a considerable amount of research that has found lower participation rates for women in business ownership compared to men (Parker, 2009).

Hundley (2000) also investigated the earnings gap associated with self-employment and reported that self-employed male earnings increased with marriage and family size. He also found that women tended to choose self-employment to facilitate household production while men choose to be self-employed to achieve higher earnings (probably to enable them provide for their families as males were traditionally viewed as breadwinners). Maloney (2004) reported that married women were very likely to quit their paid sector jobs to become self-employed when they became pregnant; and Wellington (2006) suggested that married women with greater family responsibilities were more likely to be self-employed. Devine (1994) used Current Population Survey (CPS) data from the US over 1975 – 1987 to estimate the earnings of females (in order to compare potential earnings by occupational status) and reported that the predicted employment earnings of the self-employed females exceeded those of females who were paid workers.

Georgellis and Wall (2005) examined the factors that influenced transition into self-employment paying particular attention to gender differences. They found that men were more responsive to the wage differential between paid work/wage employment and self-employment; liquidity constraints were more important for men and the link between father's self-employment status and the probability of self-employment was stronger for men when compared to women. Overall, the researchers suggested that for women, self-employment was a closer substitute for part-time work and labour-market inactivity than it is for men. They attributed such differences to the different labour market opportunities and occupational strategies of women.

In developing countries especially, there might be some perceived gender roles for women and perhaps a cultural bias against women in formal paid employment which might 'push' females once again into self-employment. For example in our country of study – Nigeria - it is reported that one third of its labour force are women, and although women occupy about 30% of all posts in the public sector, they only occupy 17% of senior positions. Women at every educational level also earn less than their male counterparts, which is evidence of a bias (British Council, 2012). While there are no gender-specific laws in Nigeria, there are inequalities most notably in formal sector representation for women in the country. Women are also five times less likely to own land despite accounting for 70% of the rural labour force, and the haphazard "Sharia Law" in some northern states of the country might affect women in ways that are different to men (British Council, 2012).

Given these potential gender disparities, this thesis will also undertake an empirical analysis of occupational differences, labour wages and household consumption levels as they depend on gender. It is hoped that this gender analysis will add to the gender literature and the results will throw further light on the situation identified by the research while contributing to the literature.

2.4.2 LABOUR FORCE PARTICIPATION AND HOUSEHOLD CONSUMPTION

This section of the literature review will focus on the relationship between labour force participation and household consumption.

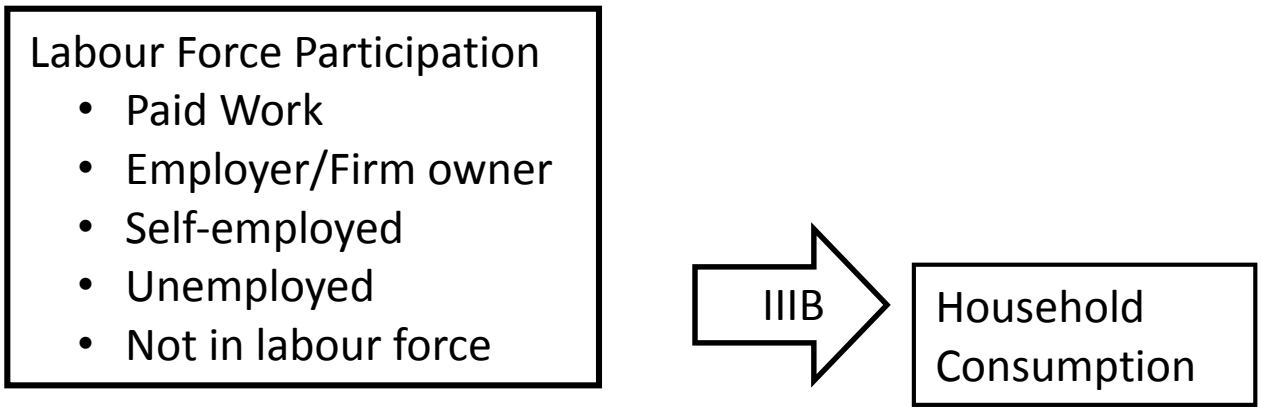


Figure 8: Conceptual Model (Labour Force Participation and Household Consumption)

Though the literature is replete with studies that examine the occupational status debate from an individual motivational point of view, the view that households could be strategic in terms of how they participate in the labour force seems to be sparsely researched. Most models and studies currently available in the literature make use of individual variables - where the employment choice depends on the relative earnings of an individual being either in self-employment or finding paid work (Bosch and Maloney, 2010, Günther and Launov, 2012).

A technique that can take into account household data and the conventional fact that in developing countries decisions on occupational choice could be made on a household level as households try to make the most of their joint utility[23], by ensuring that the whole household achieves a

[23] How exactly "Utility" is captured in this thesis is explained later in section 5.2. To summarise, the thesis measures utility in terms of labour wages and household consumption after invoking strict rationality in preferences.

"maximum" consumption stream, seems to be almost missing from the literature. To the best of this author's knowledge, only two studies have taken this into account in developing countries.

Firstly, Tamvada (2010) measured welfare by "household adult equivalent per-capita consumption expenditure" for a sample of Indian households, and used quintile regressions to find strong empirical evidence that employers had the highest welfare in terms of consumption, while the self-employed with no employees had slightly lower returns than paid workers, but a higher welfare than casual labourers. In particular, he found that having a higher proportion of individuals in the employer category had a positive relationship with adult equivalent household consumption, followed by having a high proportion of paid workers, then the self-employed and finally casual labourers.

Secondly, Gindling and Newhouse (2012) take into account households via household consumption; this was when they tested to see if the self-employed predominantly lived in households where the per-capita consumption was above the $2/day poverty line in their West–African study. They found that a high proportion of the self-employed came from quite poor households and could not move on to "success" in terms of household consumption.

Thus while the occupational status debate has been raging in the developing country literature, authors seem to have overlooked the possibility that decisions are often made on a household level in developing countries as regards employment; because household units might seek to maximise their combined consumption.

This thesis takes this into account and postulates that households could decide how many individuals will go into each occupational category as they jointly seek to maximise the total consumption of the household. For example, in a household of 5 individuals who are eligible for work, the household could decide to send 3 individuals into paid work and 2 individuals into self-

employment, because the household is being strategic about achieving a maximum consumption stream.

If there actually is a relationship between labour force status and labour wage or consumption, households would have to deliberate how to apportion employable individuals; and having individuals in paid work could be a sort of buffer for the household, as paid jobs are known to be associated with less variation in labour wages (because such incomes are specified in the employment contract). While it could be true that individuals in self-employment could have more months of higher and lower variation in labour wages/incomes from their more risky "entrepreneurial" ventures, the household could still apportion them to such a labour status in the hope that they could achieve high income streams and achieve success in some instances of self-employment.

Thus the proportion of individuals in each occupational category could have implications for total household consumption. Also since labour wage/ income (influenced by savings, transfers and investments) should directly influence consumption positively, it will be beneficial to the overall inquiry to see if the relationship between occupational status and labour wages holds true for the proportions of occupational statuses and household consumption as well.

This thesis thus makes a further contribution to the developing country debate by allocating each household into proportionate groups showing employers, paid workers, self-employed "own account" workers, unemployed individuals and individuals not in the labour force. It thereby examines the relationship between occupational status proportion and household consumption: a concept pioneered by Tamvada (2010), in the Indian context. It is hoped that the results derived from this final analysis will throw added light on the primary examination: to understand where in developing countries differences in income and consumption via occupational statuses come from.

2.5 CHAPTER SUMMARY

As the thesis has highlighted by the literature review carried out in this chapter, there has been quite a significant amount of theoretical and empirical interest in the subject of occupational status and its resultant economic outcome. For this particular inquiry, the current array of researchers are now roughly grouped into three schools, with some overlaps[24]: a first group who expect the self-employed in developing countries to be a disadvantaged group of the working poor, a second group who view the self-employed in developing countries as an advantaged faction, and a third group who view the self-employed in developing countries as a mixture of advantaged and disadvantaged individuals.

However, although a considerable amount of work has been done at both theoretical and empirical levels to investigate these occupational outcomes, there are often differences in the results that are reported. These differences might be due to dissimilarity in data samples, varying methodologies and/or other undetermined factors.

Therefore there are still interesting analyses that require refinement especially in the area of occupational choice and how it might influence welfare in terms of labour wage or consumption, especially in developing countries where certain resources could be scarcer than in developed countries. With this thesis, the researcher aims to fill a significant gap in the literature by looking at three indicator variables, education, labour wages and household consumption, and using methodologies that offer useful insights. The researcher will also take advantage of a data set that offers essential and interesting variables that also allow for distinctions to be made between employers, paid workers, self-employed "own account" workers, unemployed individuals and individuals not in the labour force, including the possibility of gender differentiation.

[24] Some authors can be cited from different groups and have changed their views over time.

CHAPTER 3: DATA SETS

3.1 SOURCE - NIGERIA

The data used for this analysis originates from the Nigerian Living Standards Survey (NLSS), otherwise known as the Living Standards Measurement Survey (LSMS), for the years 2004 and 2009[25]. The NLSS is an extensive survey and detailed in its coverage of various topics; it serves as a good basis for an in-depth analysis of households and individuals in the country. This survey was conducted by the Nigerian Bureau of Statistics (NBS) a body that has undergone training by and receives technical support from the World Bank. The data set provided will help in the present analysis, with its comprehensive provision of essential variables useful to the empirical study.

3.1.1 OVERVIEW OF HOW SURVEYS WERE CONDUCTED

The history of Nigerian Living Standard Survey (NLSS) dates back to three periods. The pre-1993 period, 1993-1999 period, and the 2000-2008 period. Each of these periods are unique in their own way. During the pre-1993 period, there were no national efforts at monitoring poverty and the National Consumer Survey (NCS) as NLSS was then known approached the measurement of poverty with different objectives.

However, during the 1993-1999 periods, national effort started in May 1993 when the NBS (then Federal Office of Statistics; FOS) collaborated with the World Bank to conduct several national consumer surveys. This period marked the beginning of a search for Nigerian data. The search further led the World Bank to collaborate with the NBS and National Planning Commission (NPC) under the National Committee on poverty to produce the first ever poverty report in Nigeria. Using the NCS data of 1985-1992, three draft reports were produced leading to what is called "the evolution of poverty and welfare in Nigeria 1985-1992". This was followed by

[25]The researcher is grateful to the NBS for the data. All standard data collection procedures were followed leading to ethical approval by Aston Business School Ethics Committee.

the “Poverty Profile for Nigeria 1980-1996” published in 1999 and was made possible through the World Bank support to NBS for the NCS of 1996 and the extended analysis to the NCS data of 1980/81.

The Harmonized Nigeria Living Standard Survey (HNLSS) is an instrument for regular monitoring of welfare and social trends for different population groups of the society especially the poor. The aim of this data is that it will be useful especially to the Federal Government of Nigeria, all states in Nigeria, Non-Governmental Organisation (NGO), International Development Partners such as the World Bank, UNDP, UNICEF, and other institutions involved in monitoring welfare and poverty across the globe. Due to the comprehensiveness and relaibility of the data, it was used in this thesis.

3.1.2 SAMPLING PROCEDURE

The sample design employed for the surverys is a 2-stage cluster sample design in which Enumeration Areas (EAs) or Primary Sampling Units (PSUs) constitutes the 1st stage sample while the Housing units (HUs) from the EAs make up the 2nd stage sample or the Ultimate Sampling Units (USUs).

3.1.2.1 Sample Size: Sample sizes must meet some minimal requirement in order to obtain reliable estimate. Hence, for NLSS Surveys, the sample size varies from state to state depending on the number of Local Government Areas (LGAs) in each state. Ten (10) EAs were selected in each LGA making a total of 7,774 EAs to be canvassed for throughout the federation from the 774 LGAs including the Federal Capital Territory (FCT) Abuja. In totality, the data contains 100,685 individuals in the 2004 survey, and 533,838 individuals in the 2009 survey.

3.1.2.2 Selection Procedure: The 7,740 EAs were selected directly from the population of the EAs in the National Population Commission (NPopC) with equal probability of selection. Prior to selection, all the contiguous EAs were arranged in serpentine order in each LGA of the state. This arrangement ensured that there was no overlapping.

The 2009 survey was more intensive and covered a larger sample than the 2004 survey. For the 2009 survey, a total of 77,390 households were covered from a sample of 77,400 households giving the survey coverage rate of 99.9 percent. Of all the six zones, it was only the South West (SW) zone that had the least response rate of 99.9 percent. The response rate in the remaining zones was 100.0 percent each. However, this does not mean that the responses were all valid or useful for the thesis. For example, this thesis made use of the total household consumption variable for households and only 6,919 households provide this information. At the household level, out of the 77,390 retrieved, only 73,329 were able to be scanned and thus included in the total data.

3.1.2.3 Weights: The NLSS, like most household surveys, is based on the NISH framework/design. The NISH design is a two-stage design with EA's as first stage units and households as second stage units. Ten enumeration areas (EAs) were randomly selected each month and five household were systematically selected from the household listing of each selected EAs. Population level estimates are made by multiplying the data for each household by two factors, one equal to the inverse of the probability of selecting that household from the total list of households in its EA, and one equal to the inverse of the probability of selecting that EA from the list of EAs in its state. The variable Household weight was used in the data set for the weight. These weights were taken into account in all calculations in this thesis.

The weighting factor is at the EA level in each state where:

Nh = the total number of EAs in state h.
nh = the number of sampled EAs in state h.
Mhi = the number of listed households in ith EA of state h.
nhi = the number of sampled households in ith EA of state h.
Xhij = the number of persons in the jth household in ith EA of state h.
Phij = the poverty score for the jth household in ith EA of state h.

The above will apply to all the individual members in order to give the population. However, the above weighting factor will be multiplied by average household size, when there is need to take the household aggregates to the population. These individual weights were used accordingly in sections 5.4 and 5.6 for the individual assessments and household weights were applied in section 5.8 household for the household assessment.

3.1.3 DATA COLLECTION

The Federal Office of Statistics (FOS) permanent Field staff who were resident in the enumeration areas were responsible for data collection during the survey. These interviewers conducted interviews with the households. There were seven interviewer visits to each selected household at a minimum of four-day interval in a cycle of 30 days.

Composition of the Teams for data Collection: Every State had 20 roving teams, while FCT, Abuja operated with 10 teams. A team was made up of one supervisor and one enumerator. The teams were structured into two groups, which worked alternatively each month to cover the selected EA.

Supervision and Quality Control: A number of measures were put in place to ensure that the NLSS data were of good and acceptable quality. For instance, a supervisor was attached to each team to observe interviews and confirm the pre-selected households. He was to verify and edit completed questionnaires. The State officers and zonal controllers conducted regular monitoring visits to the EAs. Headquarters monitoring groups also visited states on quarterly basis, for on-the-spot assessment of the quality of work. An independent firm was engaged to monitor the fieldwork in the States from the commencement to the end of the survey. A World Bank Mission team from Washington also took part in the monitoring exercise.

Supervisors Instructions: The following instructions were given to the supervisors of each team.

(i) Publicity: You must supervise the delivery of the letters of introduction to the local authorities and chiefs in the rural areas and, to the households in the urban areas. You will introduce the team and explain the purpose of the survey in each selected cluster.

(ii) Finding the Selected Household: You should help the interviewers find the selected households, using the maps and information established during the pre-survey stage. You should correct the maps where necessary. Also, help the interviewers to persuade reluctant households to participate. For those households which persist in refusing or those which cannot be traced, it is your responsibility to replace these households with others from the list of replacement households. If the selected household has left the dwelling, and a new household now lives there, then you should select the new household as the replacement household. If the dwelling is now vacant, then you should take the next "replacement" household on your sample list.

(iii) Verification of Questionnaires: At the end of every visit, you will have to check that the questionnaires have been correctly completed before the team leaves the field. If necessary, you will have to ask the interviewer to go back to the household to complete the questionnaire.

(iv) Observing Interviews: At least thrice every cycle during the survey, you must accompany each interviewer to observe his interview techniques.

(v) Verification of Interview: Every day, you should visit at random, one of the households interviewed on the previous day to ascertain whether the interviewer actually visited the house to conduct an interview.

(vi) Sending the completed questionnaires to the Data Entry Operator: The first round data cover sections 1-8 and the second covers 8-13. At the end of the third visit, when data in sections 1-6 will have been collected, you should send the completed part of the questionnaire to the Data Entry Operator. And at the end of the cycle (seventh visit) you should send the second part (sections 8-13) of the questionnaire to the Data Entry Operator so that she/he enters the data while

you leave the cluster.

(vii) Checking the Printouts: After data for each round have been entered in the computer, you should compare the printout with the data on the questionnaires. You should also look for any errors made by the interviewer, using tests for coherence in the computer programme. You will have to mark in red ink, on the printout and on the questionnaire all errors detected by the data entry operator so that the interviewer and the data entry operator can clarify these as soon as possible.

In addition, you will be responsible for collecting information on the localities surveyed (community questionnaire) and also supervise or help collect information on prices. You are also responsible for ALL the industry codes in the questionnaire. As soon as the interviewer finishesadministering a section, you should do the coding before sending the questionnaires to the data entry operator. The various tasks and responsibilities for you are explained in detail in the following sections.

Retrieval of Completed Questionnaires: Completed Questionnaires were sent to zonal offices from the States for onward transmission to the NBS headquarters for data extraction and data processing. The retrieval of records was done on a monthly basis.

Data Processing Training: The first level of training for the survey to ensure that the data quality was unquestionable consisted of three categories of officers, namely, the trainers at the zonal level, fieldwork monitoring officers and data processing officers who were crucial to the successful implementation of the survey. The intensive and extensive training lasted for five days. Zonal Level Training The training took place in the six zonal FOS [now NBS] offices representing the six geo-political zones of the country. These are Ibadan (South West) Enugu (South East), Calabar (South South), Jos (North Central), Maiduguri (North East) and Kaduna (North West). The composition of the team from each State to the six different zones were the State officer, one scrutiny officer and two field officers, making four persons per state. Two resource persons from

the headquarters did the training with the zonal controllers participating and contributing during the five-day regimented and intensive training. State Level Training

The third level training was at the State level. A total of 40 officers were trained, comprising 20 enumerators, 10 editing staff and 10 supervisors. The State Statistical Agencies, as a matter policy, contributed 5-10 enumerators. The ten-day exercise was also regimented, intensive and extensive because the enumerators were also crucial for the effective implementation of reliable data collection (NBS; 2014).

3.2 PRIMARY INDICATORS OF NIGERIA

An overview of Nigerian macroeconomic and microeconomic indicators reveals that the country shows features typical of a developing country. This section will divulge the Nigerian primary indicators so as to put the research question in context. Recall that the interest for this thesis as stated earlier is the desire to understand where differences in labour wages/incomes and household consumption levels come from in developing countries. The primary indicators analysed in this section will establish that Nigeria at present shows features of an archetypal developing country.

With a population of about 168 million people, Nigeria is the most populous country in Africa and accounts for 47% of West Africa's population. Nigeria is classed as a middle-income (lower) country with a GDP of $262.6 billion and a GNI per capita of $1,440 in 2012. It is also the biggest oil exporter in Africa, with the largest natural gas reserves in the continent. At the time the data for this analysis was collected, it was Africa's second largest economy and according to 2011 estimates, the GDP was comprised of 35.4% agriculture, 33.6% industry and 31% services. According to 2007 government figures, about 66% of the Nigerian population was in the labour force, and the country's population growth rate from 2005 to 2010 was estimated at 2.3% per annum (World Bank, 2013).

In April 2014, Nigeria rebased the GDP of the country via the National Bureau of Statistics under the advice and supervision of the World Bank[26] so as to include sectors that were not previously in the National Income figures. This applied especially to the telecommunications sector and the entertainment industry. The result increased the country's GDP for 2013 by 89% to $509.9 billion, making Nigeria the biggest economy in Africa.

[26] Global best practice of rebasing is every 5 years but Nigeria had not rebased in 24 years since 1990.

The labour force participation rate in Nigeria for adult[27] women was 47.9% in 2011, 38.7% in 2007, 38.1% in 2005 and 37.0% in 2000. For adult men, the labour force participation rate was recorded at 63.3 % in 2011, 70.6% in 2007, 71.7% in 2005 and 73.7% in 2000 (United Nations, 2014, SLOAN, 2014). According to 2004 World Bank estimates, the Nigerian labour force distribution by occupation was 44.6% in agriculture, 11.5% for industry, and 41.7% for services. 70.9% of men and 74.8% of women in the total civilian employed labour force reported being self-employed in 2005 (SLOAN, 2014). The self-employed in Nigeria are made up of a heterogeneous group of individuals, some engaged in highly skilled capital and technology intensive businesses at one end, while others are involved in mundane labour-intensive everyday jobs that have low returns[28].

[27] 'Adult' is defined as being between the ages of 15 and 60 (The official working age in Nigeria).
[28] There is a high level of inequality within the country as identified by the high Gini-coefficient of 0.49.

3.3 ECONOMIC GROWTH

Throughout the last 10 years, Nigeria has been carrying out an ambitious reform agenda. The most far-reaching element was to base the budget on a conservative reference price for oil, with the excess saved in a special, "Excess Crude Account" (ECA). The economy responded with strong growth between 2003 and 2010, with further growth expected in the next decade (World Bank, 2014). Table 1 below highlights the recent real GDP growth rate in the country over the last decade.

Table 1 : Real GDP Growth Rate in the Last Decade

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Growth Rate (%)	8.2	21.2	10.3	10.6	5.4	6.2	7	6	7	8	7.2

Source: (GlobalFinance, 2014)

Inflation during the past decade has averaged 12% and the World Bank reports that the country is still over-reliant on oil as a source of revenue and this causes increased macroeconomic risks. Oil accounts for close to 90% of exports and roughly 75% of consolidated budgetary revenues. Nigerian GDP at purchasing power parity (PPP) has almost trebled from $170 billion in 2000 to $451 billion in 2012; however the World Bank estimates that the size of the informal sector (which is not included in official figures) puts the actual numbers closer to $630 billion. Correspondingly, the GDP per capita doubled from $1400 per person in 2000 to an estimated $2,800 per person in 2012. (Again, with the inclusion of the informal sector, it is estimated that GDP per capita hovers around $3,900 per person). The population also grew from 120 million in 2000 to 160 million in 2010. These figures might be revised upwards by as much as 40% since the country completed the rebasing of its economy in 2014.

The greatest hindrances to the growth of the Nigerian economy as identified by the World Bank are the lack of adequate infrastructure, especially as regards electricity and transportation, and also government corruption; factors that for individuals might influence the occupational option and

eventual decision to engage in an employment option. The north of the country is substantially poorer than the south, and there has been some religious extremism in the north of the country. Economists have described a sort of “resource curse", understood to mean an abundance of natural resources, which fuels official corruption; reportedly, 80% of Nigeria's energy revenues flow to the government. Nigeria currently ranks 6th worldwide and 1st in Africa in farm output, 44th worldwide and 3rd in Africa in factory output and 63rd worldwide i.e. 5th in Africa in services output.

3.4 UNEMPLOYMENT

According to Trading-Economics (2014) between 2006 to 2011, the unemployment rate averaged 14.6 %. Notably, unemployment in the country reached an all- time high level of 23.9% in December 2011 and a noteworthy low level of 5.3% in December 2006. A breakdown of the official unemployment rates in the last decade for Nigeria, as reported by the International Labour Organization (ILO), is shown in Table 2 below:

Table 2: Unemployment Rates during the Last Decade

Source	Age	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
LFS[29]	Male	7	7.8	7.7	8.2	8	8.1	7.5	6.9	8.9	9	8.8	9.8
LFS	Female	10.5	9.8	9.6	10.4	9.9	9.7	8.6	7.9	9.4	9.7	9.7	10
LFS	Total	8.6	8.7	8.6	9.2	8.9	8.8	8	7.4	9.1	9.3	9.2	9.9
LFS	15-19	23.2	24.1	22.5	25.7	26.1	29.1	25.9	23.8	30.8	29.5	29.3	32.7
LFS	20-24	16.7	17.7	16.4	18.8	19.2	19.7	17.2	17.2	21.3	21.1	20.3	21.8
LFS	25-29	10.8	10.8	10.9	11.6	10.9	10.3	10.4	9.2	11.8	12.2	12.6	12.9
LFS	30-34	8.9	8.9	8.7	9.6	8.7	8.7	7.8	6.7	8.6	8.9	8.8	9.9
LFS	35-39	7.8	7.6	7.6	8.2	8.7	8	6.9	6.5	7.3	7.7	7.7	8.1
LFS	40-44	6.7	6.7	7.1	7.2	6.7	6.5	6	5.5	6.9	7.5	7.3	7.5
LFS	45-49	6.2	6.1	6.8	6	5.9	5.9	5.4	5.1	6.1	6.1	6.1	7.1
LFS	50-54	6.2	6.7	6.2	7.1	6.4	6.2	5.7	5.3	5.9	6.1	6.4	6.9
LFS	55-59	6.3	5.7	5.7	6.5	5.3	6	5.3	4.8	6.3	7	7	7.5
LFS	60-64	3	3	3.1	4.7	5	4.5	4	3.8	5.6	5.2	4.7	6

Source (ILO, 2014, World Bank, 2013)

[29] Labour Force Survey

These official reports indicate that the country has a high rate of unemployment; especially amongst young people. As unemployment has been highlighted in the literature as a possible factor *pushing* people into self-employment, these unemployment analyses provide additional motivation for conducting this study. This is also relevant because if individuals perceive that there are few jobs in the labour market, they might be willing to settle for whatever paid jobs are offered without running the risk of searching for better offers; or they might venture into pushed self-employment if there are no available paid jobs. In addition, the reported lack of adequate infrastructure, especially as regards electricity and transportation, could push the cost of doing business upwards, making it difficult for individuals with inadequate capital to compete fairly, and hence resort to the push form of self-employment if they cannot find paid work. At the same time these elements could be providing opportunities for other individuals who could possibly take advantage of these lapses to run profitable businesses.

3.5 POVERTY

The WorldBank (2014) reports the poverty headcount ratio for Nigeria as 46% in 2009/2010, down from 48% in 2003/2004. In terms of per capita levels the poverty ratio was recorded as 64% and 62% respectively for both years. A breakdown of the poverty ratio is given below, as recorded by Nigerian National Bureau of Statistics (NBS, 2014) for both years surveyed for this study, and using the same data that will be used for the empirical analyses in this thesis:

Table 3: Recent Poverty Rates

Source (NBS, 2014)

	Revised Absolute Poverty 2003/04 (Per Capita Methodology)	Revised Absolute Poverty 2009/10 (Per Capita Methodology)	Revised Absolute Poverty 2003/04 (Adult Equivalent Methodology)	Revised Absolute Poverty 2009/10 (Adult Equivalent Methodology)
NATIONAL	64.20	62.60	48.40	46.00
RURAL	73.40	69.00	57.50	52.80
URBAN	52.20	51.20	36.80	34.10

3.5.1 REGIONAL POVERTY AND TRENDS

The NBS reported that relative poverty was most apparent in the North of the country compared to the South-West and South-East. Some analysts speculate that it is such poverty and underdevelopment has been exploited by religious extremists leading to incidents of violence in the North of the country[30]. A further breakdown of the latest poverty figures and indexes by the 2009/2010 Living Standards survey conducted by (NBS, 2014) throws more light on poverty in the country:

1) Relative poverty is defined by reference to the living standards of majority in a given society. In 2004, Nigeria's relative poverty measurement stood at 54.4%, but increased to 69% in 2010. The North-West and North-East geo-political zones recorded the highest

[30] Most notably and recently by the "Boko-Haram" sect.

poverty rates in the country, with 77.7% and 76.3% respectively in 2010, while the South-West geo-political zone recorded the lowest at 59.1%.

2) Absolute poverty is defined in terms of the minimal requirements necessary to afford minimal standards of food, clothing, healthcare and shelter. Using this measure, 54.7% of Nigerians were living in poverty in 2004 but this increased to 60.9% in 2010. Among the geo-political zones, the North-West and North-East recorded the highest rates at 70% and 69% respectively, while the South-West had the least at 49.8%.

3) The-dollar-per-day measure refers to the proportion of those living on less than a US$1 per day poverty line. Applying this approach, 51.6% of Nigerians were living below US$1 per day in 2004, but this increased to 61.2% in 2010. Although the World Bank standard is now US$1.25, the old reference of US$1 was the standard used in Nigeria at the time that the survey was conducted. The North-West geo-political zone recorded the highest percentage at 70.4%, while the South-West geo-political zone had the least at 50.1%.

4) Subjective poverty is based on self-assessment and "sentiments" from respondents. In this regard, 75.5% of Nigerians considered themselves to be poor in 2004, and in 2010 the number was up to 93.9%.

5) Income inequality. The survey suggests rising income inequality in the country as measured by the Gini coefficient. By this measure, income inequality rose from 0.429 in 2004 to 0.447 in 2010, indicating greater income inequality during the period.

6) Consumption Expenditure Distribution. Analysis of consumption expenditure distribution indicates that the top 10% income earners were responsible for about 43% of total consumption expenditure, the top 20% were responsible for about 59% of total consumption expenditure, and the top 40% were responsible for about 80% of total consumption expenditure in 2009/2010.

The implication of these reports for our investigation is twofold. Firstly, since there is significant poverty and income inequality in the country, and occupation has been highlighted as the main means of income distribution for developing countries like Nigeria where there are no unemployment benefits or any form of welfare for the disadvantaged, we should be able to clearly observe if indeed occupational status influences labour wage and household consumption through penalties or premiums. Furthermore, since there exist regional differences in economic indicators e.g. poverty, these regional differences need to be taken into account in any empirical estimation.

Secondly, the income and consumption expenditure reports could imply that those with higher income levels also enjoy higher consumption expenditure. However, these reports have not controlled for occupational statuses. An investigation might throw further light on the relationship between income and household consumption, and this will be undertaken in the third analysis of the thesis.

Since the data used for the empirical sections of the thesis are the 2003/2004 and 2009/2010 Living Standard Measurement Survey (LSMS) data by the NBS, the poverty analysis by the NBS is especially suitable. The different measures of poverty have further reinforced the notion that about half of the country can be defined as poor by standard conventions. This, as the thesis has highlighted, could provide additional support for our motivation for this assessment. How can the occupational statuses and the resultant labour wages and consumptions influence poverty levels, especially since increased income and consumption are associated with an escape from poverty?

3.5.2 OTHER INDICATORS

Concerning other relevant indicators, the literacy level of the country has risen steadily over the years, from 55% in 1991 to 61% in 2009; and primary school enrolment was recorded at 81% in 2010 (World-Bank, 2013, World-Bank, 2014, NBS, 2014). As already noted, the country had a Gini-coefficient of 0.49 in 2013, indicating that there is a very high degree of inequality. The country has also been notoriously plagued by corruption. It was reported by Transparency International as the second most corrupt country in the world in 2001, although this position has improved to 144th out of 177 in 2013 (Transparency International, 2014). The Nigerian Government has undertaken various projects aimed at reducing poverty and boosting development aided by numerous international bodies like the UN, the World Bank, the IMF and numerous charity organizations.

3.5.3 THEORETICAL IMPLICATIONS OF CORRUPTION AND INEQUALITY INDEXES ON THE BUSINESS ENVIRONMENT IN NIGERIA

Given the high indexes of inequality (consistently high Gini-coefficients of 0.429 in 2004, 0.447 in 2010 and 0.49 in 2013) and corruption in Nigeria (Transparency International (2014) and World Bank (2014)), there could be the subversion of legal, political and regulatory institutions by the powerful for their own benefit, as proposed by (Glaeser et al., 2003).

Alesina and Rodrik (1994) show that inequality can reduce economic growth, especially in democracies; and Smith and Garnier (1845) argue that good economic institutions must secure private property against expropriation and such confidence in the rule of law encourages individuals to invest physical capital and thereby fosters economic growth. For instance, some researchers have argued that in some countries individuals coming from poorer backgrounds, and

with fewer connections, may feel less secure about their property rights or access to the legal system than those who have stronger connections and greater wealth.

In line with this, Glaeser et al (2003) argue that inequality is detrimental to the security of property rights and therefore to growth because it enables the rich to subvert the political, regulatory and legal institutions of society – and they also argue that if the courts are corruptible, then the legal system will favour the rich and not the just. Glaeser et al (2003) further argue that a strong middle class develops only when institutions protect it from the powerful, and they use data from the American Gilded Age between 1865 and 1914, when industrialization created large inequalities in wealth and huge corruption in the USA, along with the Gini-coefficient and the "Rule of Law[31]" index for a range of countries and concluded that inequality coupled with a poor rule of law[32] was bad for growth and business in general.

Estrin et al. (2013) use GEM surveys for 42 countries between the period of 2001 -2006 to test the impact of corruption, weaker property rights and government activity on the aspirations of business owners. They find that business owners benefit from a strong government (in the sense of property rights enforcement) and even by smaller governments, but are constrained by corruption. They also report that social networks can mediate some but not all institutional deficiencies. Relevant to Nigeria, Buccellato and Mickiewicz, 2009 show that hydrocarbons were a leading determinant of increased gaps between the rich and the poor in Russia, a finding that they claim can be extended to similar oil-rich countries like Venezuela, Iran and Nigeria. These studies all seem to highlight a negative relationship between inequality and corruption vis-à-vis the business environment, and that being a net exporter of oil could exacerbate the situation.

Estrin, Korosteleva et al. (2013) also argue that social capital could influence the business environment more in countries with weak institutions and high levels of corruption than in

[31] From the International Country Risk Guide.
[32] For countries with a good rule of law, inequality had no effect on economic growth.

countries with strong institutions, courts and the rule of law. In particular, they view trust as a key dimension of social capital and distinguish between "particularised trust" (Rothstein, 2003) and "extended trust" (Raiser, 1999). Particularised trust has been identified as that which emerges between two or more individuals, such as family members and friends, based on the knowledge that they belong to a particular group - say for instance the same ethnic group or religion. Extended trust on the other hand is more abstract and enables transactions to take place with only a limited amount of information about the counterpart's specific attributes.

These authors argue that in a modern market economy extended trust, unlike particularised trust, enables individuals to engage in transactions beyond the closed circles of friends and family, and that such links are necessary for the division of labour and for growth aspirations. Given the high index for perceived corruption, especially in the Nigerian government, and the reputation for "advance fee fraud" by certain[33] individuals, this could signify that extended trust could be limited and particularised trust more dominant in this context. This has implications for the business environment in Nigeria and could indicate that significant social and financial capital could be needed in some instances for business owners to achieve high growth status.

All these seem to indicate that the relationship between the employment categories could also be influenced by social and human (educational attainment) capital. Those who move to the upper tiers of society (theoretically employers and high earners in the paid jobs sector) could be individuals with a high degree of social capital and educational attainment. We should also expect to see distinct patterns in labour wages and consumption amongst these groups since the reports show such a high degree of inequality.

Furthermore, given the theoretical and empirical background as regards poverty, income distribution and corruption, theory indicates that corruption will be bad for business aspirations and growth, and that social capital could be a determining factor for business success in developing

[33] Albeit a minute amount.

countries like Nigeria. Since it is hoped that the findings from this study might be generalisable to similar countries, it might also be worth mentioning countries with similar indicators to Nigeria in terms of Gini-coefficients, corruption and sometimes poverty. Therefore in addition to the developing country literature, especially as regards Sub-Saharan Africa, countries with similar Freedom from Corruption Indexes (FCI)[34] and Gini-coefficients (GC) to Nigeria (FCI 22.7 & GC 0.49) include Russia (FCI 22.1 & GC 0.42), Kenya (FCI 21 & GC 0.47), Cote d'Ivoire (FCI 22.1 & GC 0.42), Ecuador (FCI 26 & GC 0.49) and Uganda (FCI 23.2 & GC 0.44). It is anticipated that, ceteris paribus, findings from this thesis can be generalisable to these and other developing countries.

[34] The FCI score is derived mainly from the Transparency International Corruption Perception Indexes; a score closer to 100 indicates relative freedom from corruption and lower scores indicate more corruption.

3.6 PRIMARY INDICATORS: LABOUR MARKET REGULATIONS AND UNEMPLOYMENT SAFETY NETS (DOING BUSINESS IN NIGERIA)

The Nigerian Government does not provide unemployment safety nets and housing benefits[35]. There are however no substantial government barriers to entry into either formal or informal employment, although there are procedures for starting a formal business. Due to the high self-employment and business ownership rates in the country, of major concern to this study is also the ease by which individuals can open and operate businesses, as this can affect the self-employment and employer categories.

The "*Doing Business*" international report addresses this issue. It sheds light on how easy or difficult it is for a local entrepreneur to open and run a small to medium-size business when complying with relevant regulations in different countries around the world. It measures and tracks changes in regulations affecting 11 areas in the life cycle of a business: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, resolving insolvency and employing workers (Doing Business, 2014).

In a series of annual reports *Doing Business* (DB) presents quantitative indicators on business regulations and the protection of property rights that can be compared across 189 economies. The indicators refer to a specific type of business, generally a local limited liability company operating in the largest business city. Nigeria ranked 147th in the *Doing Business* index, and it also ranked as the 122nd to start a business. This low score was primarily due to the low scores on electricity and registering property where it was placed 185 out of 189 countries in both instances. The *Doing Business* indicators for Nigeria and a few comparable countries are shown below in Table 4:

[35] So unemployed individuals have no reliable source of income and could resort to self-employment according to the literature.

Table 4: *Doing Business* indicators for Nigeria and a few comparable countries.

Indicator	Nigeria DB2014	Nigeria DB2013	Ghana DB2014	India DB2014	Kenya DB2014	South Africa DB2014	United Kingdom DB2014	Best Performer Globally DB2014
Starting a Business (rank)	122	114	128	179	134	64	28	New Zealand (1)
Procedures (number)	8	8	8	12	10	5	6	New Zealand (1)*
Time (days)	28.0	28.0	14.0	27.0	32.0	19.0	12.0	New Zealand (0.5)
Cost (% of income per capita)	58.3	63.1	15.7	47.3	38.2	0.3	0.3	Slovenia (0.0)
Paid-in Min. Capital (% of income per capita)	0.0	0.0	3.7	124.4	0.0	0.0	0.0	112 Economies (0.0)*
Dealing with Construction Permits (rank)	151	146	159	182	47	26	27	Hong Kong SAR, China (1)
Procedures (number)	18	18	15	35	9	16	12	Hong Kong SAR, China (6)
Time (days)	116.0	116.0	246.5	168.0	125.0	78.0	88.0	Singapore (26.0)
Cost (% of income per capita)	3,504.8	3,842.7	259.6	2,640.4	191.3	9.9	66.0	Qatar (1.1)
Getting Electricity (rank)	185	184	85	111	166	150	74	Iceland (1)
Procedures (number)	8	8	4	7	6	5	5	10 Economies (3)*
Time (days)	260	260	79	67	158	226	126	Germany (17)
Cost (% of income per capita)	960.5	1,086.8	2,295.3	230.7	1,090.7	1,432.1	91.9	Japan (0.0)
Registering Property (rank)	185	185	49	92	163	99	68	Georgia (1)
Procedures (number)	13	13	5	5	9	7	6	4 Economies (1)*
Time (days)	77.0	77.0	34.0	44.0	73.0	23.0	21.5	New Zealand (1.0)*
Cost (% of property value)	20.8	20.8	1.2	7.0	4.3	6.1	4.7	5 Economies (0.0)*
Getting Credit (rank)	13	11	28	28	13	28	1	Malaysia (1)*
Strength of legal rights index (0-10)	9	9	8	8	10	7	10	10 Economies (10)*

Table 4 Cont'd

Depth of credit information index (0-6)	5	5	5	5	4	6	6	31 Economies (6)*
Public registry coverage (% of adults)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	Portugal (100.0)*
Private bureau coverage (% of adults)	4.9	4.1	10.4	19.8	4.7	55.6	100.0	22 Economies (100.0)*
Protecting Investors (rank)	68	67	34	34	98	10	10	New Zealand (1)
Extent of disclosure	5	5	7	7	3	8	10	10 Economies (10)*
Extent of director liability index (0-10)	7	7	5	4	2	8	7	Cambodia (10)
Ease of shareholder suits index (0-10)	5	5	7	8	10	8	7	3 Economies (10)*
Strength of investor protection index (0-10)	5.7	5.7	6.3	6.3	5.0	8.0	8.0	New Zealand (9.7)
Paying Taxes (rank)	170	167	68	158	166	24	14	United Arab Emirates (1)
Payments (number per year)	47	47	32	33	41	7	8	Hong Kong SAR, China (3)*
Time (hours per year)	956	956	224	243	308	200	110	United Arab Emirates (12)
Trading Across Borders (rank)	158	159	109	132	156	106	16	Singapore (1)
Documents to export (number)	9	9	6	9	8	5	4	Ireland (2)*
Time to export (days)	22	24	19	16	26	16	8	5 Economies (6)*
Cost to export (US$ per container)	1,380	1,380	875	1,170	2,255	1,705	1,005	Malaysia (450)
Documents to import (number)	13	13	7	11	9	6	4	Ireland (2)*
Time to import (days)	33	39	42	20	26	21	6	Singapore (4)
Cost to import (US$ per container)	1,695	1,540	1,360	1,250	2,350	1,980	1,050	Singapore (440)

Table 4 Cont'd

Enforcing Contracts (rank)	136	138	43	186	151	80	56	Luxembourg (1)
Time (days)	447	457	495	1,420	465	600	437	Singapore (150)
Cost (% of claim)	92.0	92.0	23.0	39.6	47.2	33.2	39.9	Bhutan (0.1)
Table 4 Cont'd								
Procedures (number)	40	40	36	46	44	29	28	Singapore (21)*
Resolving Insolvency (rank)	107	107	116	121	123	82	7	Japan (1)
Time (years)	2.0	2.0	1.9	4.3	4.5	2.0	1.0	Ireland (0.4)
Cost (% of estate)	22	22	22	9	22	18	6	Norway (1)
Outcome (0 as piecemeal sale and 1 as going concern)	0	0	0	0	1	0	1	
Recovery rate (cents on the dollar)	27.9	28.2	26.2	25.6	24.7	35.5	88.6	Japan (92.8)

Source: (Doing Business, 2014).

According to data collected by *Doing Business*, starting a registered business in Nigeria requires 8 procedures, takes 28.0 days, costs 58.3% of income per capita and requires paid-in minimum capital of 0% of income per capita. It is also worth mentioning that the informal sector in Nigeria consisting of unregistered businesses is quite substantial. Globally, Nigeria stands at 122nd in the ranking of 189 economies on the ease of starting a business (Doing Business, 2014).

In Nigeria, there also exists duality and a high level of informality; and the formal and informal sectors have not developed proper linkages that could lead to economic competitiveness, high levels of productivity and growth (World Bank, 2007). It is also reported that wages are higher in the formal sector than in the informal sector (World Bank, 2013, World Bank, 2014). Hence while individuals have the ability to choose what sector to enter into in the country, they might find the formal paid work sector to be preferable due to monetary reasons and as an escape route out of poverty as would be expected from the literature.

3.7 THEORETICAL REASONS FOR PULLED & PUSHED SELF-EMPLOYMENT IN NIGERIA

As evidenced by the unemployment data presented above, Nigeria has a high incidence of youth unemployment. There are also reports that official statistics grossly underestimate unemployment and disguised unemployment and some speculate that youth unemployment is as high as 60% (World Bank, 2013). The Nigerian Government does not have unemployment safety nets and housing benefits and there is a considerable amount of poverty, especially in the north of the country. Another potential quagmire for potential business owners is the lack of substantial sources of capital; these factors would seem to lend credence to the pushed self-employment case. High unemployment and poverty rates are typically seen as factors pushing people into self-employment in the literature, and Nigeria does have features that support this argument.

On the other hand, there exist opportunities for non-oil related sources of wealth, especially as the country has an abundance of natural resources coupled with its large population. Reports indicate that the manufacturing, service, export and local consumption sectors are expanding rapidly, and could be a source of good prospects for individuals with an entrepreneurial streak. Indeed Africa's richest man "Aliko Dangote" and a substantial number of successful business men and women started out as self-employed youths in Nigeria; and Nigeria is known for a multitude of successful start-ups because of opportunities for arbitragers (WorldBank, 2007). These examples can also serve as motivations for pulled self-employment.

A Gallup poll in 2008 showed that 67% of Nigerians have thought about starting a business compared to the West-African median of 44% (The West-African median includes Benin, Burkina Faso, Ghana, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal and Sierra Leone). This poll shows a high interest in entrepreneurship in Nigeria (Gallup, 2011). Almost half (45%) of Nigerians said they planned to start a business in the next 12 months, and 80% of them were very confident that a newly created business will do well in their own country.

Such optimism for business success in Nigeria signals that there is ample room for opportunity

or pull self-employment for individuals who might start businesses, to take advantage of the growing economy and government ineptitude, by providing amenities and services in terms of housing, medical services, agriculture, education, security and power generation – for example, Nigeria is the world's largest importer of private generators (Economist 2011). There is however also room for push self-employment for those who might have been forced into self-employment either by unemployment or other negative factors. This can also be said to be the case in many developing countries and one of the aims of this research will be to determine which effect is stronger and to differentiate between the two.

Ekpo and Umoh (2011) also report that the contribution to the growth of the Nigerian economy by the informal sector, which is made up mainly of the self-employed, is quite significant in terms of output and employment. In September 2010, the Education minister urged new university graduates to seek self-employment and to develop entrepreneurial skills. Over the years, the Federal and State governments of Nigeria have played significant roles in new business development. The Federal Government in the late 1980s initiated the Entrepreneurship Development Programme (EDP) run by the National Directorate of Employment (NDE). Under this policy, the Federal Ministry of Labour sought to address the graduate unemployment problem through the NDE programme which provided participants with the opportunity to acquire entrepreneurial skills and secure loan capital to enable them establish and operate their own small scale enterprises. The Federal Ministry of Industry has been in the forefront of efforts to promote the development and acquisition of entrepreneurial skills as part of its efforts to support Small and Medium Enterprises (SMEs). To this end, the Ministry established Industrial Development Centres in various parts of the country with the mandate to:

(i) Promote small-scale enterprises through the provision of extension services;

(ii) Train entrepreneurs and staff;

(iii) Assist with product design;

(iv) Process loan applications;

(v) Render, free of charge, technical and managerial services including advice on quality control, product improvement, etc.

The State Governments have also been involved in providing support to SMEs. Many states have Small Scale Credit Schemes which provide SMEs with financial and technical support. Since the late 1980s, the Federal Ministry of Industry has been supporting efforts by the states to build functional industrial estates for SMEs by way of partial reimbursement of money actually spent on the provision of industrial estates for SMEs. The "Work for Yourself Programme" (WFYP), a scheme introduced by the Federal Ministry of Industry and assisted by the International Labour Organization (ILO) and the British Council, which aims to develop entrepreneurial skills in the SME and informal sector, is one of such schemes being implemented with international assistance.

International organizations such as the African Development Bank (ADB), World Bank and the United Nations Development Programme (UNDP) have also supported efforts to aid the informal sector. In other cases, the Federal or State Governments, as the case may be, co-finance small-scale businesses which benefit from external financial assistance. Loans under the World Bank - Nigeria Small and Medium-Scale Enterprises development programme provide financial and technical assistance to these groups of entrepreneurs/business-starters. For example, the Technology Incubator Scheme was promoted and executed by the Lagos State Ministry of Commerce and Industry, with UNIDO's financial and technical assistance and supported by the organized private sector in Lagos State and the Federal Government. The scheme was designed to promote the development of technology based SMEs in Nigeria (Ekpo and Umoh 2011).

3.8 GLOBAL ENTREPRENEURSHIP MONITOR (GEM) DATA ON NIGERIA

Another very important source of information regarding self-employment/entrepreneurship in Nigeria is the Global Entrepreneurship Monitor (GEM) (Kelley et al., 2012). The GEM study is a worldwide survey conducted each year to provide data on societal issues, participation levels of individuals at different stages of the entrepreneurship process, and the characteristics of entrepreneurs and their businesses. It provides information that can be comparable within and across individual economies, geographic regions and economic development levels. GEM defines necessity-driven entrepreneurs as those who are pushed into starting businesses because they have no other source of income, while opportunity-motivated entrepreneurs are described as those who enter such activities primarily to pursue an opportunity (GEM, 2012)[36].

GEM reports that necessity-driven motives tend to be highest in the factor driven economies (mostly developing countries). With greater economic development levels, the proportion of entrepreneurs with necessity motives generally declines and improvement-driven opportunity increasingly accounts for a greater proportion of motives. Nigeria has been described in the study as a factor driven economy as were most of the Sub-Saharan African countries.

Certain indices from the GEM (2012) survey are crucial in laying the foundation for our empirical analysis. The survey reports that 68% and 63% of male and female entrepreneurs respectively surveyed in Nigeria were opportunity entrepreneurs i.e. pulled into entrepreneurship to pursue opportunities, while 32% and 37% of entrepreneurs surveyed were necessity entrepreneurs i.e they had no other work options and needed a source of income. This is not far off from the UK and US opportunity indexes of 82% and 74% and 76% and 74% for males and females respectively. Since Nigeria is classed as a developing country, compared to the other countries that are classed as developed, this also clearly contradicts the widespread and intuitive perception that most entrepreneurs from developing economies (like those involved in the survey) are a disadvantaged

[36]GEM data collected this way has some merits and weaknesses primarily because there is an overlap in the self-employment and entrepreneurship definitions. Some self-employed individuals are entrepreneurs but many are not (as they are not a homogenous group). The GEM surveys do not make this distinction and herein lies a conceptual dilemma. However the study serves as a fantastic base to compare and contrast entrepreneurship and entrepreneurial attitudes for all the countries surveyed.

group of individuals who pursue these activities because they have no other means of generating earnings; and serves as an additional catalyst for this enquiry. According to this GEM survey, the country has a bizarrely high level of opportunity entrepreneurship given its characteristics.

Furthermore, the GEM defines Total Early-stage Entrepreneurial Activity (TEA) as the percentage of adults (aged 18-64) in an economy who are nascent and new entrepreneurs. Typically, TEA tends to have an inverse relationship with economic development. The trend is for economies with low GDP per capita to have high TEA rates and with high proportions of necessity-motivated entrepreneurs. On the other hand, high GDP economies show lower TEA rates, but a higher proportion of those with opportunity-motivations. As expected, Nigeria had a TEA index of 34% for males and 36% for females, the Sub-Saharan African average being 30% for males and 27% for females - higher than the UK's 12% for male and 6% for females and the USA's 15% and 10% respectively. The worldwide average was 15.4% for males and 10.4% for females. This could be interpreted to indicate that there are a lot of necessity-motivated entrepreneurs in Nigeria.

However, Table 5 clearly demonstrates the inconsistency between theory and current data as reported by the GEM survey. According to the classical literature and by GEM definitions, high income countries in terms of GDP per capita should experience higher improvement-driven opportunity TEA rates. While the theory fits well with some countries like Japan, the Netherlands and arguably the USA, developing countries with lower GDP per capita including Nigeria, Brazil, Chile and Mexico report higher "opportunity TEA" rates than Germany, Sweden and the United Kingdom. This paradox provides some motivation for the present empirical study, as quite a considerable number of economies exhibit high rates of opportunity entrepreneurship despite their lower GDP per capita.

Table 5: GEM Survey; Opportunity Total Early Stage Entrepreneurial Activity (TEA)

COUNTRY	PER CAPITA GDP (2012)	IMPROVEMENT DRIVEN OPPORTUNITY (% OF TEA) (2012)
Nigeria	1,555	53

Zambia	1,469	46
Botswana	7,191	48
South Africa	7,508	40
Japan	46,720	66
China	6,091	39
Brazil	11,340	59
Mexico	9,742	52
Chile	15,363	69
Egypt	3,187	23
Germany	41,514	51
Netherlands	46,054	66
Poland	12,708	30
Sweden	55,245	49
United Kingdom	38,514	43
Russia	14,037	31
Croatia	13,227	36
United States	49,965	59

Source (Kelley et al., 2012, World Bank, 2014)

Traditional labour theory (e.g. the Harris-Todaro and Ranis-Fei models) suggests that Nigeria should have a higher level of necessity driven entrepreneurship given its lower GDP when compared to other countries. However, GEM reports indicate that it has a higher opportunity entrepreneurship rate than developed countries with significantly greater GDPs. This disparity between theory and current data serves as further motivation for this analysis.

3.9 IMPLICATIONS FOR SELF-EMPLOYMENT

Given the evidence from the GEM, *Doing Business*, ILO, UN and World Bank reports, there seems to be a good reason to argue that both types of self-employment (push and pulled) are likely to co-exist in Nigeria. High poverty and unemployment rates could serve as push factors forcing people into self-employment; while perceived opportunities, like deficiencies in the infrastructure that can be exploited and the high economic growth rates, could serve as a catalyst for pulling individuals into self-employment, especially since the government and other economic agencies seem to extol the virtues of entrepreneurship in the country and there are not many barriers to starting a business.

Furthermore, institutional and structural barriers, such as the high cost of doing business and the problems associated with start-up in the country, could discourage all but a few individuals who choose to be self-employed to survive and thrive in such an environment; typically those endowed with finances, social capital, entrepreneurial skill, dexterity, patience and a real desire to see the process through. Hence Nigeria serves as the perfect context to study the effects of occupational status especially as it reports such high rates of self-employment.

3.10 FINAL DATA SAMPLE

As stated previously in Section 4.1, the data used for the empirical analysis originates from the Nigerian Living Standards Survey (NLSS) otherwise known as the Living Standards Measurement Survey (LSMS), from the Nigerian Bureau of Statistics (NBS) and for the years 2004 and 2009. The data obtained from the NBS covers both rural and urban areas of all the 36 states of Nigeria and the Federal Capital Territory. It is an extensive nationwide survey and randomly sampled 100,685 individuals in the 2004 survey, and 533,838 individuals in the 2009 survey. As stated in the conceptual model shown in Chapter 1 and once again shown below, this investigation aims to understand where the differences in labour wages and household consumption levels come from, as far as they depend on any of the employment statuses that have been labelled "labour force participation" in the conceptual model below.

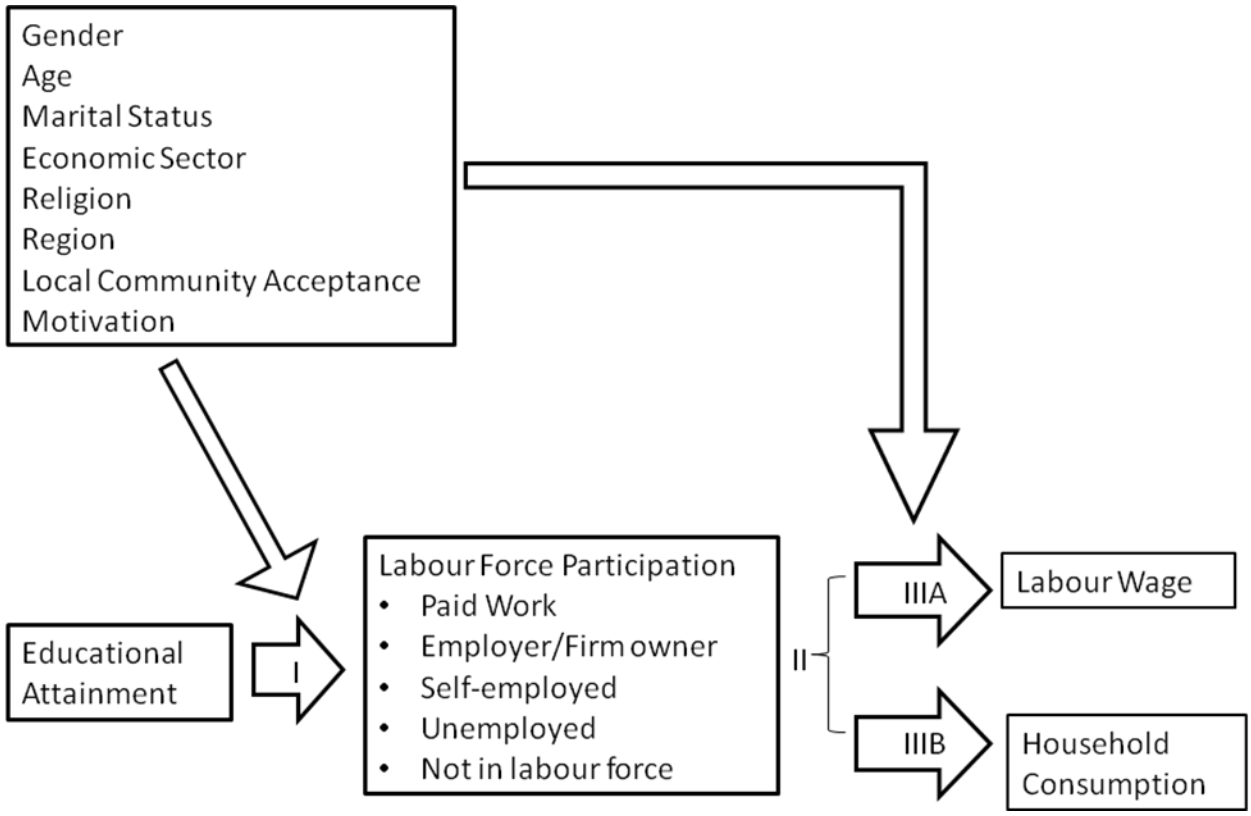


Figure 9: Conceptual Model (as Figure 2)

In order to assist in the empirical investigations, the entire data collected for both years are filtered for the following:

1. **Individuals not between the ages of 16 and 65:** This is done because these reflect the legal ages to enter the labour force and retire respectively in Nigeria. This is as recommended by the self-employment and occupational status literature (Demirgüc-Kunt et al., 2009, Maloney, 2004, Cunningham and Maloney, 2001, Mandelman and Montes-Rojas, 2009, Kijima, 2006).

2. **Everyone employed by the agricultural sector**: The literature suggests that farmers should be excluded for a variety of reasons but chiefly because the agricultural profession is largely a self-employed one by definition, and developing countries are especially characterized by a large number of self-employed individuals in subsistence agriculture (Demirgüc-Kunt et al., 2009, Parker, 2009, Maloney, 2004, Cunningham and Maloney, 2001, House et al., 1993)[37].

3. Any individual who reported being **retired or a full-time student** despite being between the ages of 16 and 65.

4. Finally, the top and bottom two and half (2.5) percentile earners are removed from the entire sample to avoid "superstar" influences (Rosen, 1981).

[37] There were 3,764 individuals from the 2004 and 131,492 individuals from the 2009 surveys respectively in this category.

The remaining individuals are then sorted into the following occupational statuses labelled "labour force participation "in the conceptual model. The occupational distribution of individuals from the final sample of the survey is shown in Table 6.

Table 6: Occupational Statuses Reported

Labour Force Participation	Category	2004		2009	
		Male	**Female**	**Male**	**Female**
Employers	Individuals who are self-employed with employees	453	152	2,169	717
Paid Workers	Individuals who work and earn salary income	2,624	1,045	18,741	9,050
Self-Employed (Own Account)	Individuals who are self-employed with no employees	4,197	2,361	23,209	21,434
Unemployed	Individuals who are eligible for employment and not employed but sought for work in the past 12 months	2,067	3,403	8,671	8,955
Not in Labour Force	Individuals who are eligible for employment and not employed but have not sought for work in the past 12 months	865	1,230	6,206	6,541
Gender Sum		**10,206**	**8,191**	**58,996**	**46,697**
Survey Total		**18,397**		**105,693**	

The survey reveals that the majority of individuals in employment (i.e. the employed labour force, consisting of the "employer", "paid workers" and "self-employed" categories) for both men and women are in self-employment; this is followed by the paid workers, and the smallest category is the employers. This is line with other official reports from the NBS, SLOAN (2014) who report that the civilian employed labour force reported being about 70% self-employed between 2004 and 2010.

In terms of gender, females represent a higher proportion of the unemployed and individuals not in the labour force for both periods surveyed (even though this gap narrowed in the later 2009

survey). This is also in line with labour market expectations and the gender literature in developing countries, where men are traditionally viewed as the main "breadwinners" of the family and women to be engaged in full time household activities (Maloney, 2004, Bosch and Maloney, 2010). Men are found in higher proportions in any employment activity for both years surveyed[38].

[38] Women however seem to be well represented in self-employment.

3.11 REGIONAL DIFFRENCES

As highlighted in official reports and in section 4.5.1, Nigeria has substantial regional differences in terms of poverty, culture, demographics and economic activity (NBS, 2014, World Bank, 2013). To explore this regional heterogeneity in our empirical analysis, the country is divided into four regions in line with the classifications of the World Bank and the NBS, comprising regional, economic and cultural distinctions. A map of the entire country, showing all the 36 states that make up the country with the Federal Capital, appears below in Figure 10.

Figure 10: Full Map of Nigeria Showing the 36 States of the Country and the Federal Capital (FC)

As pointed out in the poverty reports by the NBS, the Northern part of the country is substantially poorer than the South, in addition to having some ethnic differences in the make-up of the population. In terms of religion, the South of the country is predominantly Christian while the North is predominantly Muslim. In addition, the South-West of the country, especially Lagos, is

known as the commercial hub; and Abuja, located in the middle of the country, became the official capital of Nigeria in 1991 and has been designated as the official Federal Capital since then.

Crude oil, which makes up a huge proportion of the country's exports, is found in the South-South of the country; and agricultural products predominantly come from the South-West part of the country (though the South-East also is increasingly agricultural). In terms of literacy, the North of the country has a substantially lower literacy rate (39.7%) than the South (81%) which has led scholars to speculate whether the combined low literacy rates and high poverty rates have led to the rise of religious extremism and violence in the North[39].

In terms of ethnic groups, the Yoruba and Edo are mostly found in the South-West, the Ibos, the Ibibios, Ijaws and Tivs are found in the South-East, the Nupe, Igala and Idoma are found in the Mid-Belt; while the Hausa, Fulani and Kanuri are found in the North, with some overlaps in certain instances. In reality, the country has reportedly over 580 ethnic groups and over 370 recognized tribes (NBS, 2014).

These regional disparities will have to be taken into account during the derivation of estimates in order to draw any meaningful conclusions and also as robustness checks. To account for these regional differences, the researcher divided the sample of data into four regions based on the classifications of the World Bank and the NBS, which include regional, economic and cultural distinctions.

Thus, the Northern part of the country has been reported as the poorest region with also the lowest levels of economic activities and literacy rates. The Middle (Mid-belt) region serves as the base category against which other regions are measured, as it is the region with moderate economic indicators in terms of economic activity, literacy rates and government investment. The South-

[39] Through the Boko-Haram sect.

West of the country is the economic hub while the South-East is known for its small business spirit, along with considerable agricultural and industrial production. The regional classifications used in this thesis are presented below in Figure 11, and the statistics of occupational distribution by regions is thus shown in Table 7.

Figure 11: Regional Differences and Classifications

Table 7 below presents the statistical distribution from the surveys according to the regional classifications used.

Table 7: Survey Distribution of Final Data Sample by Regions

State	2004 Data		2009 Data	
	Employment Status	**Observations**	**Employment Status**	**Observations**
North	Employer	189	Employer	491
	Self-Employment	891	Self-Employment	4,297
	Paid Worker	758	Paid Worker	5,340
	Unemployed	1,740	Unemployed	3,015
	Not in Labour Force	559	Not in Labour Force	3,655
Mid-belt	Employer	157	Employer	268
	Self-Employment	1,016	Self-Employment	6,355
	Paid Worker	660	Paid Worker	5,735
	Unemployed	1,152	Unemployed	2,023
	Not in Labour Force	424	Not in Labour Force	2,575
South-West	Employer	126	Employer	1,541
	Self-Employment	1,991	Self-Employment	20,339
	Paid Worker	1,150	Paid Worker	9,474
	Unemployed	820	Unemployed	7,817
	Not in Labour Force	478	Not in Labour Force	3,442
South-East	Employer	133	Employer	586
	Self-Employment	2,660	Self-Employment	13,652
	Paid Worker	1,101	Paid Worker	7,242
	Unemployed	1,758	Unemployed	4,771
	Not in Labour Force	634	Not in Labour Force	3,075
Total		**18,397**		**105,693**

The final sample specified in Tables 6, 7 and again in Table 8 is used throughout this thesis for all empirical estimates. To provide clarity as to the distribution of the data and show that is a fairly balanced sample, reflective of the whole labour market of the country, the data is further sorted into all the states in the country as they are expressed by the regional classifications given above in Figure 11. Table 8 below thus shows the distribution of the final sample by regions and states:

Table 8: Survey Distribution of the Final Survey Data by Regions and States

	State	Region	2004 Data		2009 Data	
			Frequency	%	Frequency	%
1	Abia	South-East	834	4.53	3,748	3.55
2	Adamawa	North	341	1.85	1,644	1.56
3	Akwa Ibom	South-East	488	2.65	533	0.50
4	Anambra	South-East	959	5.21	6,347	6.01
5	Bauchi	North	376	2.04	995	0.94
6	Bayelsa	South-East	1,027	5.58	1,774	1.68
7	Benue	Mid-belt	177	0.96	983	0.93
8	Borno	North	373	2.03	1,167	1.10
9	Cross_Rivers	South-East	593	3.22	2,138	2.02
10	Delta	South-East	377	2.05	5,376	5.09
11	Ebonyi	South-East	400	2.17	863	0.82
12	Edo	Mid-belt	742	4.03	4,187	3.96
13	Ekiti	South-West	398	2.16	3,710	3.51
14	Enugu	South-East	568	3.09	2,837	2.68
15	Gombe	North	469	2.55	593	0.56
16	Imo	South-East	543	2.95	5,465	5.17
17	Jigawa	North	161	0.88	921	0.87
18	Kaduna	North	521	2.83	2,895	2.74
19	Kano	North	419	2.28	3,346	3.17
20	Katsina	North	331	1.80	822	0.78
21	Kebbi	North	177	0.96	765	0.72
22	Kogi	Mid-belt	749	4.07	4,187	3.96
23	Kwara	South-West	647	3.52	3,695	3.50
24	Lagos	South-West	1,012	5.50	10,785	10.20
25	Nassarawa	Mid-belt	589	3.20	1,391	1.32
26	Niger	Mid-belt	440	2.39	3,267	3.09
27	Ogun	South-West	752	4.09	5,586	5.29
28	Ondo	South-West	556	3.02	2,163	2.05
29	Osun	South-West	647	3.52	8,018	7.59
30	Oyo	South-West	553	3.01	8,656	8.19
31	Plateau	North	251	1.36	1,475	1.40
32	Rivers	South-East	497	2.70	245	0.23
33	Sokoto	North	161	0.88	921	0.87
34	Taraba	Mid-belt	342	1.86	871	0.82
35	Yobe	North	232	1.26	934	0.88
36	Zamfara	North	325	1.77	320	0.30
37	Fct	Mid-belt	370	2.01	2,070	1.96
	Total		**18,397**	**100.00**	**105,693**	**100.00**

3.12 CONTROL VARIABLES

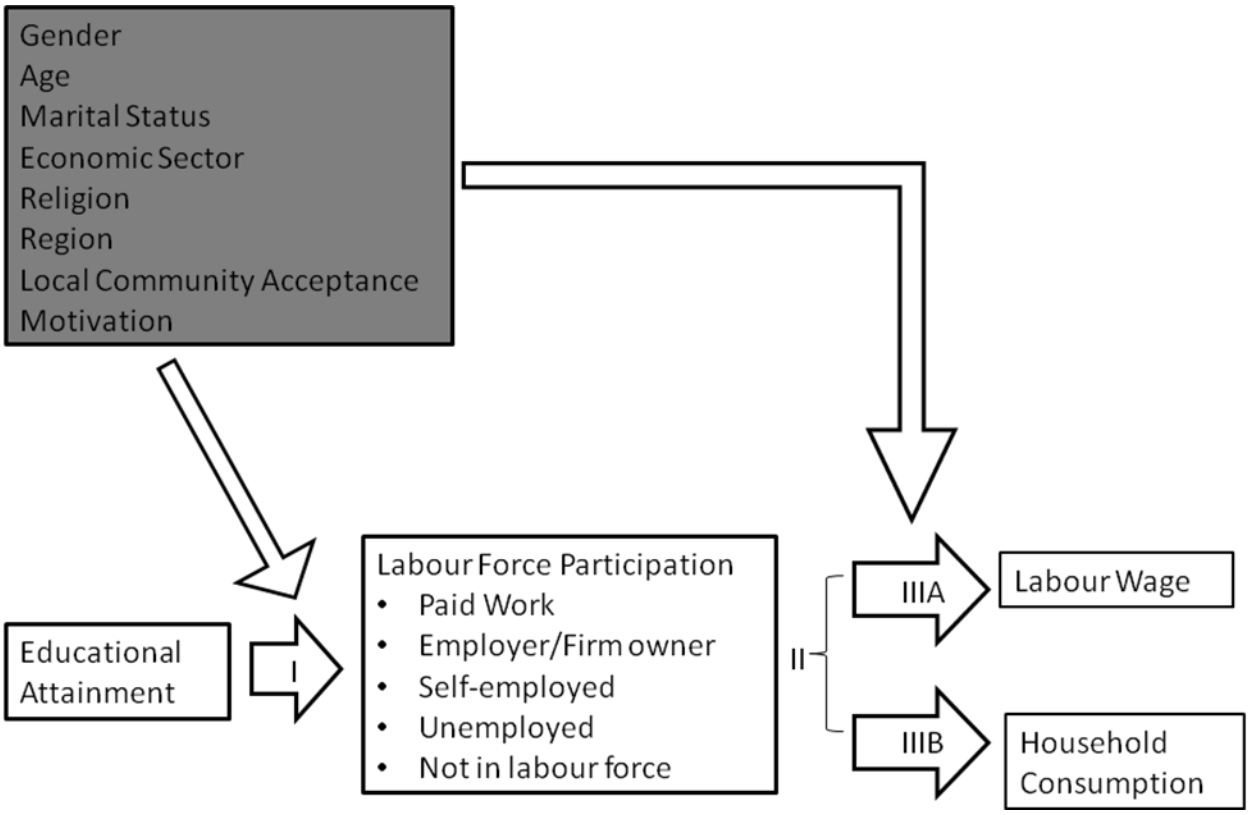


Figure 12: Control Variables in Conceptual Model

The influences that the control variables can exert on labour force participation status have been discussed in the Overview, Section 2.1. We have also seen from Table 6 that the data sample available for the estimations encompasses all employment options available for the employable labour force marked "Labour Force Participation" in the conceptual model. The control variables must however be included if the thesis is to provide meaningful results (the reader is once again advised to be careful to understand the caveats when interpreting the results as a full range of observed and unobserved variables are not included in the conceptual model). The measurement of the control variables that will be used in the regression analysis and how they are operationalised are highlighted below in Table 9.

Table 9: Variables Used in Empirical Estimates – Descriptive Statistics in Table 11

Variable Name	What it Measures	2004 LSS Data	2009 LSS Data
Labour Force Participation	Employment Status	Employer = 1 Self-Employed =2 Wage Earner = 3 Unemployed = 4 Not in Labour Force = 5	Identical
Employed	Being in Employment	Dummy (1/0) [Employed = 1] [NonWorker = 0]	Identical
Sex	Male or Female	Dummy (1/0) [Male = 1] [Female = 0]	Identical
Ageyears **Agesquare**	Age in years Age Squared	Age in Years Age Squared	Identical
Sector	Urban or Rural Residence	Dummy (1/0) [Urban = 1] [Rural = 0]	Identical
Martstat	Marital Status	Dummy (1/0) [Married] [Not Married = 0]	Identical
Religion	Religion	Dummy (1/0) for 4 religions: [Christian, Muslim, Traditional and Agnostic]	Identical
Edlev*	Educational Level	Dummy (1/0) for 5 categories: [NoEd – No Education] [LoEd – Low Education] [MidEd – Medium Education] [HighEd – High Education] VeryHighEd – Very High Education]	Identical
Region	Region of the country	Dummy (1/0) for 4 regions: [Southeast – South East] [Midbelt – Middle Belt] [Southwest – South West] [North - North]	Identical
House or Land	A Proxy for source of collateral for Bank Loan	Dummy (1/0) If the Individual owns a Plot of Land or House: [Owns = 1] [Does not own = 0]	Identical
LocalLanguage	Ability to Speak or/and Write a Nigerian Language	Dummy (1/0) If the Individual can speak/write a Nigerian Language: [Can Speak/Write = 1] [Cannot Speak/Write = 0]	Identical
Public	Employer Public/Government Sector or Private Sector	Not Available	Dummy (1/0) for 2 groups [Public = 1] [Private = 0]
Economic Sector	Industry Classification	Not Available	Dummy (1/0) for 3 groups [Real/Manufacturing] [Trade]& [Service]

Table 9 Cont'd

Variable Name	What it Measures	2004 LSS Data	2009 LSS Data
Lamtrent	Log Annual Income	Log of Annual Income	Not Available
TTHHCONSPTN	Total Consumption by Household	Not Available	Sum of Household Cosnsmption

Table 9 shows how the various variables of concern are utilised in this thesis. It is important to note that the Annual Income variable is only available from the 2004 survey data, thus the empirical analysis concerning labour wage will be done using only the 2004 survey data. In the same manner, the Total Household Consumption variable is only available from the 2009 survey data, thus the empirical analysis concerning household consumption will be done using only the 2009 survey data.

Of major concern to our first empirical analysis is how educational attainments affect the labour force participation category of individuals. The literature recognizes two ways of measuring educational levels/attainments. The first method is by number of years in education, a method used by several researchers ((Mandelman and Montes-Rojas, 2009), (Van der Sluis et al., 2005) and (Pietrobelli et al., 2004)). The other method is by using dummy variables to capture different levels of education: a technique also used by a considerable number of researchers ((Cunningham and Maloney, 2001), (Tamvada, 2010), (Kijima, 2006), (Demirgüc-Kunt et al., 2009) and (Günther and Launov, 2012)).

This thesis uses the latter method for two reasons. First because this is how the information is readily available and second because there could be threshold levels of education that are not captured by specifications involving years of education (Kijima, 2006). Table 10 reports the educational levels/attainments of individuals surveyed in the samples and denoted by "*Edlev*". The "*Edlev*" variable measures educational attainments and is further broken down into dummies that have the subsequent numbers of observations for each year surveyed.

Table 10: Survey Distribution of Educational Attainments Reported

Educational Category (Dummy [1/0])	Educational Attainments	Year	
		2004	2009
No ed	Denotes individuals with no education at all.	819	5,170
Low ed	Denotes individuals with a little degree of education. [These range from primary school to junior secondary certificate holders.]	5,800	32,518
Mid ed	Denotes individuals with a moderate degree of education. [These range from Senior Secondary Certificate holders to O level degree holders and Nursing School Graduates.]	5,969	53,075
High ed	Denotes individuals with a high degree of education. [These range from Bsc/First degree University holders to individuals with degrees equivalent to University certificates.]	1,262	12,592
Very high ed	Denotes individuals with very high educational attainments. [These range from Master's degree holders and the equivalents to Doctorate degree holders.]	270	2,338
Unspecified	Denotes individuals who do not report any educational attainments.	4,277	-
N		18,397	105,693

As is standard practice and for a much clearer insight into the data and how they can assist this investigation, the descriptive/summary statistics for the data sample used are presented below in Table 11:

Table 11: Summary/Descriptive Statistics for Variables in Table 9 (Both Years)

VARIABLES	Whole Sample Mean (Std Dev)		Male Sample Mean (Std Dev)		Female Sample Mean (Std Dev)	
	2004	2009	2004	2009	2004	2009
Employment						
Employer	.0558	.0273	.0622	.037	.043	.015
	(0. 2296)	(.1629)	(.2416)	(.1882)	(.2023)	(.123)
Self-Employed	.3564	.4223	.4112	.393	.2882	.459
	(.4789)	(.4939)	(.4921)	(.4885)	(.4529)	(.4983)
Paid Worker	.3387	.2629	.3607	.318	.294	.194
	(.4733)	(.4402)	(.4802)	(.4656)	(.4555)	(.3953)
Unemployed	.2973	.1667	.2025	.147	.415	.192
	(.4571)	(.3727)	(.4019)	(.3541)	(.4928)	(.3937)
Non Labour Force	.1139	.1206	.0848	.105	.150	.140
	(.3176)	(.3256)	(.2785)	(.3068)	(.3573)	(.3471)
Education						
No ed	.044	.049	.038	0.040	0.052	.06
	(.2062)	(.2156)	(.1921)	(.1958)	(.2223)	(.238)
Low ed	.315	.308	.335	0.271	.291	.354
	(.4646)	(.4615)	(.4718)	(.4444)	(.4543)	(.4783)
Mid ed	.324	.502	.375	0.518	.260	.482
	(.4682)	(.4999)	(.4843)	(.4997)	(.4388)	(.4997)
High ed	.068	.119	.086	0.142	.047	.09
	(.2528)	(.3239)	(.2804)	(.3489)	(.2114)	(.2867)
Very high ed	.01467	.022	.0204	0.030	.007	.013
	(.1203)	(.1471)	(.1416)	(.1695)	(.0860)	(.1119)
Unspecified	.232		0.145		.342	
	(.4224)		(.3516)		(.4744)	
Demographic						
Age in years	34.32	33.81	35.14	34.6	33.3	32.81
	(13.165)	(12.064)	(13.114)	(12.085)	(13.159)	(11.963)
Married	.552	.769	.501	.79	.618	.743
	(.4972)	(.4213)	(.5)	(.4072)	(.4860)	(.4371)
Christian	.634	.693	.658	.684	.604	.704
	(.481)	(.461)	(.474)	(.461)	(.488)	(.456)
Muslim	.353	.298	.329	.306	.383	.288
	(.478)	(.457)	(.470)	(.462)	(.486)	(.452)
Geographic						
Sect1(Urban)	.428	.615	.453	.615	.397	.616
	(.4948)	(.4865)	(.4978)	(.4866)	(.4893)	(.4864)
Sect2(Rural)	.572	.384	.547	.385	.603	.384
	(.4948)	(.4865)	(.4978)	(.4866)	(.4893)	(.4864)
South-East	.342	.277	.350	.281	.332	.273
	(.4743)	(.4477)	(.4768)	(.4495)	(.4709)	(.4454)

Table 12 Cont'd -Table 11 (Continued)						
VARIABLES	**Overall Sample Mean (Std Dev)**		**Male Sample Mean (Std Dev)**		**Female Sample Mean (Std Dev)**	
	2004	**2009**	**2004**	**2009**	**2004**	**2009**
South-West	.248	.403	.259	.388	.234	.423
	(.4319)	(.4905)	(.4384)	(.4872)	(.4234)	(.4940)
Mid-belt	.185	.16	.186	.167	.184	.152
	(.3885)	(.367)	(.389)	(.3728)	(.3874)	(.3594)
North	.224	.158	.205	.164	.25	.152
	(.4175)	(.3656)	(.403)	(.3707)	(4331)	(.359)
Further Controls						
House or Land	.101	.045	.089	.044	.118	.048
	(.3022)	(.2085)	(0.2846)	(.2043)	(. 3221)	(.2137)
LocalLanguage	.675	.908	.745	.939	.590	.871
	(.468)	(.2878)	(.0.435)	(.2393)	(.4919)	(.3355)
Public		.708		.689		.747
		(.4548)		(.4628)		(.435)
Real Sector		.087		.108		.060
		(.2817)		(.3108)		(.2375)
Trade Sector		.238		.164		.333
		(.4263)		(.3706)		(.4713)
Services Sector		.1401		.176		.095
		(.3471)		(.3807)		(.2931)
Lamtrent(Income)	6.973		8.511		5.057	
	(5.8607)		(5.4462)		(5.7944)	
TtConsptnHH(C_h)		71,496.92		50,320.64		94,743.68
		(16,776.48)		(14,547.49)		(31,307.99)
N	**18,397**	**105,693**	**10,206**	**58,996**	**8,191**	**46,697**

Table 10 reported the educational levels/attainments of individuals surveyed. As can be seen, there are 4,277 individuals in 2004 with missing education values but none in 2009. The 4,277 individuals with missing education values were included in the educational regression estimations with their educational status denoted as "Unspecified" to add clarity to the results. However, these individuals were not included in the income estimations as the Mincer regression estimation works better with education values. Therefore the income estimations involved a restricted data sample of the total respondents without the individuals who did not provide education values. This left a sample size of 14,120 individuals remaining from the 2004 survey.

Furthermore, individuals not active in the labour force (i.e. the unemployed and individuals not in the labour force) were removed from the sample for the income estimations as they did not (and indeed should not) report any incomes. Thus the income estimations (in Section 4.5) made use of the 10,832 individuals that were residual in employment after using the Heckman (1979) procedure to select the employed individuals from the entire 14,120 sample.

Table 11 and its continuation on Table 12 present the summary/descriptive statistics for both years of the variables presented in Table 9. It shows that the nature of the sample is in line with the self-employment literature in developing countries (Gindling and Newhouse, 2012, Fields, 2013, Maloney, 2003). From Table 6 we have already observed that for the working labour force, that the self-employed (own account) category is the biggest category of workers; this group is followed by the paid worker category, and finally the employer category. For individuals not in employment, the unemployed category is bigger than the not in labour force category.

From the educational attainment dummies, it is seen that a majority of individuals reported having a medium degree of education. This is followed by individuals who reported having low educational attainments, followed in turn by individuals reporting high educational attainments. Those with no education at all come next, and the smallest group is those with very high educational attainments; the 2004 data additionally has individuals who did not specify any educational attainment and a dummy is also made to capture such individuals.

The demographic variables indicate that the mean age of individuals in the sample is between 33 and 34; a significant majority of the sample is also married. The geographical variables indicate that in the 2004 survey a majority of individuals sampled resided in rural regions/areas, while a majority of those sampled in the 2009 survey resided in the urban regions. These rural-urban differences between surveys also account for the differences in marriage rates as highlighted in the national statistics (NBS, 2014).

We can also infer that the sample is well distributed across the four regions, and see that only a small proportion of the sample reported being owners of houses or landed property while quite a significant majority report being able to speak/write in a Nigerian language. In terms of religion, a significant majority of individuals sampled are Christians (other reports indicate that the country is more or less evenly split between Christians and Muslims), followed by Muslims; agnostics and traditional worshippers make up about 3% of the entire sample and form the base category when appropriate.

Finally, we observe that the 2009 sample contains a significant proportion of public sector/government employees; the majority of the rest of the employed workforce are in the trade/retail sector, followed by individuals in the services sector; and the real/manufacturing sector appears to be the smallest group. As expected, there are gender differences in the summary statistics, and the annual income variable indicates that on average women earn slightly less than men, showing that a differentiation of the empirical analysis by gender would be particularly insightful and beneficial.

The Annual Income variable "lamtrent" was calculated as follows. Some individuals reported how much their annual income was and this was the figure used in the estimations. Others reported their incomes per day, week, month, or quarter. Such individuals had their labour wages converted into annual incomes by multipying based on the number of days, weeks, months or quarters worked. Thus the annual income variable is not adjusted for hours so we don't know whether women are indeed earning less than men per hour, or in productivity terms. On average, women appear to be in households that consume more, even though estimations later show that female headed households consume less than male headed households.

As previously highlighted, It is important to note that the Annual Income variable "lamtrent" is only available from the 2004 survey data, thus the empirical analysis concerning labour wage will be done using only the 2004 survey data. In the same manner, the Total Household Consumption

variable is only available from the 2009 survey data, thus the empirical analysis concerning household consumption will be done using only the 2009 survey data. The 2009 survey data will be converted into household variables and the summary statistic presented in Table 25, section 5.8.

The total household consumption amount for each household in the analysis TtConsptnHH(C_h) was derived by adding together the naira (monetary) value of total household food purchases, total household food produced, total sundries, and total capital expenditure by households within the year. As recent studies suggest that a better measure of household consumption would be the adult equivalent scaled consumption[40] instead of the indiscriminate per-capita consumption, the thesis made use of both household consumption per capita and household consumption after adjusting for adult equivalents (Demoussis and Mihalopoulos, 2001).

[40] Adult Equivalent Scales are measures that show how much an individual household member of a given sex and age contributes to the household expenditures relative to a standard household member: TEDFORD, J. R., CAPPS, O. & HAVLICEK, J. 1986. Adult equivalent scales once more—A developmental approach. *American Journal of Agricultural Economics,* 68**,** 322-333.

3.13 VARIANCE INFLATION FACTOR (VIF) TEST

The Variance Inflation Factor (VIF) test for multicollinearity proved satisfactory by yielding absolute values of 2.56 and 2.32 for 2004 and 2009 respectively; the rule of thumb is that the vif test should yield absolute values below 10 to be satisfactory for empirical use. The results of the VIF test are presented below. A correlation matrix for the data is also presented in the Appendix section of this thesis.

Table 13: Results of VIF Test

Variable	2004		2009	
	VIF	1/VIF	VIF	1/VIF
Unspecified	5.06	0.197733		
Mided	5.99	0.16707	6.25	0.159904
Lowed	5.8	0.172347	5.24	0.190704
Highed	2.49	0.40139	3.3	0.302857
Veryhighed	1.35	0.739374	1.48	0.677347
Southwest	2	0.498769	2.16	0.463524
Southeast	1.99	0.501702	2.03	0.493797
North	1.83	0.546927	1.7	0.587319
Local language	1.69	0.593254	1.17	0.8554
Urban	1.39	0.719644	1.15	0.867066
Age in years	1.35	0.738476	1.16	0.85982
Married	1.31	0.762277	1.14	0.878618
HouseorLand	1.07	0.9339	1.02	0.983795
Mean VIF	**2.56**		**2.32**	

3.14 CHAPTER SUMMARY

The summary statistics we have analysed thus crucially indicate that the data are in line with the self-employment literature on developing countries and also show labour market characteristics typical in developing countries. This chapter has also helped make clear how this thesis will use various variables in the data and thus interpret the results observed; it has consequently ensured that we can link our findings to our research aims and objectives. The VIF test and correlation matrix presented in the Appendix section have also ensured that our data are suitable for the enquiry.

It will be recalled that this thesis aims to understand where the differences in labour wages and household consumption levels come from as they relate to employment status in developing countries: in other words how employment statuses (employer, paid worker or self-employed "own account") affect labour wages and household consumption. By this means, the thesis will also be able to infer if holding a particular employment status is disadvantageous or beneficial compared to another employment option. The assessments that will be engaged in are presented next, in the assessments section.

CHAPTER 4: ASSESSMENTS

4.1: INTRODUCTION AND OVERVIEW

In this chapter the researcher will review the three assessments that will be used to fulfil the research objective(s) of using one human capital indicator, education; and two welfare proxies, labour wage and household consumption, to understand where the differences in labour wages and household consumption levels come from as they relate to employment status in developing countries. This chapter will thus focus on the econometric aspects of the methodologies used and their appropriateness for this study. The chapter is of great importance as it explains exactly how the researcher has conducted this investigation and come to the conclusions included.

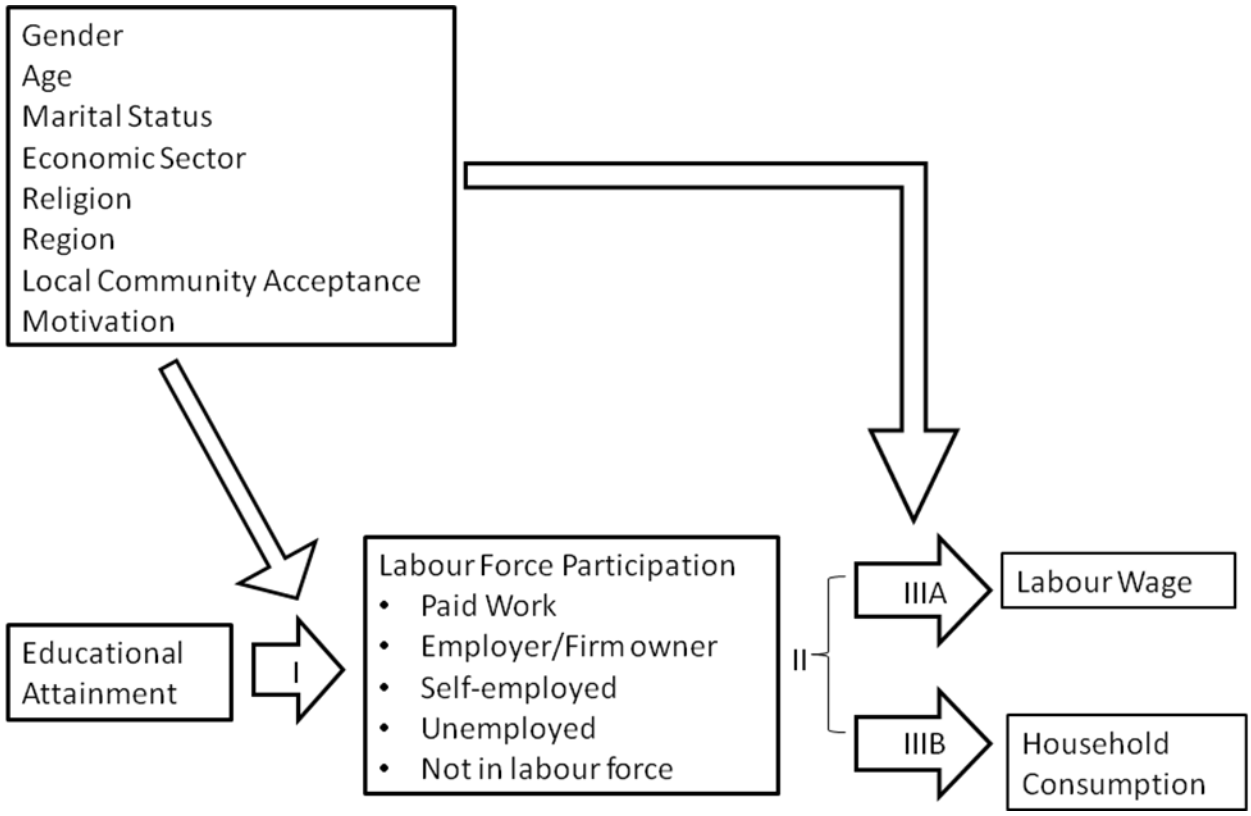


Figure 13: Conceptual Model (as Figure 2)

It will be recalled from the conceptual model that the interest of this thesis is driven by a desire to comprehend where in developing countries differences come from in labour wage and consumption vis-à-vis educational abilities, and by extension occupational statuses, . This thesis will explore and answer this question in three ways:

1. **Education:** Are there patterns in educational attainment and occupational status probabilities? If there are indeed patterns then we might find that individuals with certain educational attainments are likely to be in a particular occupational group. The empirical analysis at this stage will thus aim to answer the question: "How does educational attainment affect the probability of being in any of the employment categories (employer, paid-employee, own account worker, unemployed or not in the labour force) in a developing country?" The literature on developing countries (reviewed in section 3.3.1) also seems to suggest that the self-employed should have lower educational attainments compared to paid workers. Thus this thesis focuses on education as a proxy for privilege in terms of skill/human capital and examines how education attainments are linked with occupational status.

   Expected Prediction: From the literature that has been surveyed in section 2.3.1, it is expected that as individuals become more educated in developing countries, they will opt for self-employment over wage work. This means that the expected pattern for the data is that more educated individuals will be engaged in paid work while less educated individuals are expected to be in self-employment. Thus hypothesis 1 seeks to address this inquiry.

i. "Hypothesis 1"H_1: Educational attainments will affect the probability of belonging to an employment status in a developing country.

This way hypothesis 1 addresses the portion of the conceptual model labelled "I" which seeks to answer the question: "How do educational attainments affect the probability of belonging to any of the employment/occupational states in a developing country?" By performing this analysis, the thesis aims to discover if there are patterns in educational attainments as they affect the occupational statuses. Precisely, the thesis aims to investigate if more educated individuals are to be found in self-employment or paid-employment/wage work.

2. **Labour Wage:** Does belonging to an occupational status influence labour wage? If it does, then individuals can report differing wages/incomes/earnings even if they possess the same characteristics and skills as their colleagues in a different occupational class**.** In addition, the literature on developing countries (reviewed in section 2.4.1) seems to suggest that self-employed individuals in developing countries will earn a lower labour wage compared to individuals in paid work, even if they have similar characteristics. To test the proposition that occupational status influences labour wage, and the implications this has for push or pulled self-employment, this thesis examines the employer, paid employment and self employment premiums/penalties conditional on individual characteristics.

   Expected Prediction: From the literature that has been surveyed in section 2.4.1, it is expected that self-employed individuals in developing countries will experience a labour wage penalty when compared to wage earners. This means that the expected pattern is that individuals in self-employment in the data should experience a labour wage penalty compared to wage earners. Thus the hypothesis 2 seeks to address this inquiry.

ii. "Hypothesis 2"H_2: Workers experience a labour wage penalty or premium depending on their occupational status in a developing country.

Hypothesis 2 addresses the portion of the conceptual model labelled "IIIA" which seeks to empirically analyse how labour wage is determined by labour force participation. By performing this analysis, the thesis aims to discover if there are patterns in occupational statuses as they affect labour wage. Precisely, the thesis aims to investigate if paid/wage workers typically earn more or less than self-employed individuals conditional on observable characteristics.

3. **Household Consumption:** Does belonging to an occupational status group have any implications for household consumption? If it does, then having a proportion of individuals belonging to an occupational group will influence the level of household consumption. Furthermore, the literature on developing countries (reviewed in section 2.4.3) seems to suggest that self-employed individuals in developing countries will be a disadvantaged group who consume less than those in paid employment. If the self-employed are indeed a disadvantaged group, they should report lower household consumption than those in paid employment. To test the proposition that self-employment leads to lower consumption, this thesis examines household consumption conditional on occupational distribution in the household by looking at household consumption dependent on the proportion of individuals in households in either paid employment/wage work or in self-employment.

   Expected Prediction: From the literature that has been surveyed in section 2.4.3, it is expected that self-employed individuals in developing countries are disadvantaged across a number of welfare indicators when compared to wage earners. This means that the expected pattern is that individuals in self-employment in the data should be worse-off in terms of household consumption when compared to wage earners. This also means that having a higher proportion of self-employed individuals in the household workforce should have a negative relationship with total household consumption and having a higher proportion of wage earning household workforce should have a positive relationship with total household consumption. Thus hypothesis 3 seeks to address this inquiry.

iv. "Hypothesis 3"H_3: Total household consumption expenditure will depend on the employment status composition of employable household adults in a developing country.

Hypothesis 3 addresses the portion of the conceptual model labelled "IIIB" which seeks to determine how total household consumption[41] is determined by the proportion of household individuals in each occupational category. By performing this analysis, the thesis aims to discover if having a higher proportion of a particular occupational category is beneficial or detrimental to household consumption.

[41] Household consumption in this case refers to a proxy for household welfare based on consumption and is measured by total household consumption per capita and adult equivalised household consumption per capita.

4.2: MODELLING

It has been identified in the literature that motivations for individuals opting for occupations are complex and multilayered (Parker, 2004, Yamada, 1996, Reynolds, 1997, Meager, 1992, Maloney, 2004, Maloney, 2003, Loayza, 1996, Günther and Launov, 2012, Gollin, 2008, Cunningham and Maloney, 2001). For example, individuals can decide to be engaged in their "hobbies" regardless of the returns in terms of labour wage or personal incomes, or even go through a duration of employment when their labour wages do not reflect their actual employment value. This thesis will therefore be based on the neoclassical economic principles of maximization of utility by labour wage/income-constrained individuals and by rational choice theory, in order to enable empirical inferences to be drawn. In particular, these have the following implications:

1) It is assumed throughout this thesis that individuals have a rational, continuous and locally non-satiated preference relation, and we can take $u(x)$ to be a continuous utility function representing these preferences. The consumption bundle $x \in R_+^L$ is affordable if its total cost does not exceed the individual's wealth level, i.e. if $p.x = p_1x_1 + \ldots + p_Lx_L \leq w$. Hence there is an economic-affordability constraint and the requirement that x lies in the consumption set R_+^L, implying the Walrasian/competitive budget set i.e. that the set of feasible consumption bundles consists of the elements of the set $\{x \in R_+^L : p.x \leq w\}$. (Mas-Collel et al., 1995).

2) Based on these principles, the thesis observes the budget set that is available through income/wealth w. Hence leisure and other 'utility' generating activities not measurable through income are discarded and are not observable during these assessments. The *utility maximization problem* (UMP) can now be stated as: $Max_{x \geq 0}\, u(x)\ s.t.\ p.x \leq w$.

Hence the individual chooses a consumption bundle that maximises utility from income w. In this thesis, it is considered that individuals seek to maximise income w ($Max\ w$) and obtain the highest possible income stream so as to qualify for the dominant budget set that they can get. Therefore, individuals will seek to maximise income because any utility/satisfaction they can derive is subject to this.

Also, given the von Neumann and Morgenstern (VNM) utility function, any rational individual should try to avoid a loss, and always prefer actions that maximise expected utility. Therefore in a "lottery", where the choices are made up of labour force participation options, individuals should make a selection of the alternative that provides the highest untility.

Consequently, in line with Johnson and Darnell (1976) and a much other literature, since utility is innately unobserved (latent) and depends on income the thesis proposes that:

"Given a choice of employment options, an individual will choose the employment option that yields the highest monetary income."

The role of monetary rewards in influencing the choice of employment is a common element in the literature (Hamilton, 2000, Yun, 2000, Turnham and Jaeger, 1971, Taylor, 1996, Smith et al., 2002, Rosen, 1981, Reize, 2004, Mandelman and Montes-Rojas, 2009, Le, 2002, Tamvada, 2010).

3) From these principles, this thesis can make inferences based on income w for individuals and consumption C for households, as long as the concepts of rationality and utility maximization are followed in both cases.

4.3: EDUCATION

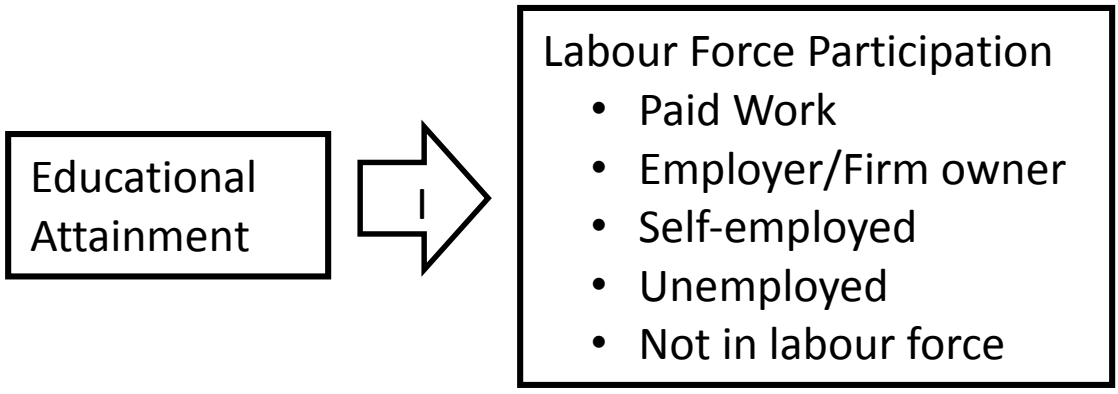


Figure 14: Conceptual Model (Education and Labour Force Participation)

As previously highlighted in 2.3.1, the main contribution of the first empirical estimation section of this thesis is that the researcher uses an emphasis on human capital, in particular educational attainment and its association with labour force participation.

4.3.1: METHODOLOGY 1.1: EDUCATION – MULTINOMIAL PROBIT

To test the proposition that there are patterns in educational attainment and occupational status, thereby focusing on education as a proxy for privilege in terms of skill/human capital; this thesis distinguishes between various occupational statuses i.e. employers, paid workers, self-employed (own account) individuals, the unemployed and those employable individuals who are not in the labour force, following the literature (Earle and Sakova, 1999, Tamvada, 2010, Mandelman and Montes-Rojas, 2009)). Consequently, it makes use of a multinomial probit equation [5.1] as follows:

$$\Pr(OccStatus = 0,1,2,3 \mid X) = \phi\,(X'\beta)$$
$$P(Oi = 0,1,2,3\,|X) = P(x'_i E + x'_i X + e_i > 0|x) \qquad [5.1]$$

$Where\ \phi$ is the cumulative distribution function of the standard normal distribution, X' is a vector of explanatory/control variables already discussed in section 4.12 and β is a vector of parameters.

In this analysis, *Oi* is the employment status of individual i.

$O \in \{$ **"Non Active"** = 0 *For individuals unemployed or not in the labour force,*

"Paid Worker" = 1 *For paid workers,*

"Ordinary Self-Employed" = 2 *For self-employed "own account" workers,*

and

"Employer" = 3 *For employers*$\}$.

Also, the explanatory variable *E* is a vector that includes the different levels of education, X is once again a vector of control variables already discussed in section 4.12, and *e* is the error term.

Specifically, variable *E* includes dummies for the categories of people based on their educational attainments.

"*Noed*" = 1 If the individual has no education at all.

"*Lowed*" = 1 For individuals with a low degree of education. These range from primary school to Junior Secondary Certificate holders.

"*Mided*" = 1 For individuals with a moderate degree of education. These range from Senior Secondary Certificate holders to Nursing School graduates.

"*Highed*" = 1 For individuals with a high degree of education. These range from B.Sc holders/First Degree University holders to professional certificate holders.

"*Veryhighed*" = 1 For individuals with very high educational attainments. These range from Master's degree holders and the equivalents to Doctorate degree holders.

"*Unspecified*" = 1 For individuals who do not report any educational attainments.

Variable *X* includes variables that are common determinants of choices for occupational status according to the literature. They are: age, marital status, sector (urban or rural), credit constraints (a proxy dummy equal to 1 if the individual owns a house or land – common collateral asked for by banks and other lending institutions), being able to speak the local language (which might be useful for transactions and is a sign of social capital) and region of country.

How exactly will this help to answer the first research question; "Are there patterns in educational attainments and occupational status?" Because if such patterns exist, then research might find that individuals with certain educational attainments are more likely to be in a particular occupational group.

If employers are indeed highly successful individuals with opportunity sets that are very different from the other self-employed "own account" individuals (or indeed even those in wage employment), theory should expect employer status to be associated with higher educational attainments, indicating pull self-employment. This is especially so if the likelihood of being an ordinary self-employed (own account) individual is higher for individuals with lower levels of education.

Empirically, the multinomial probit model is mathematically and functionally similar to a multinomial logit model except that like the simple probit model the multinomial probit uses the CDF of the standard normal distribution, while the multinomial logit uses the cdf of the logistic distribution in line with the simple logit model. Though the multinomial logit model is simpler, it also makes the often erroneous assumption of independence of irrelevant alternatives (IIA). The multinomial probit is computationally more intensive, but does not assume IIA. For our purpose therefore, the multinomial probit model is better, as highlighted and used by Klapper et al. (2010), not only because it does not assume IIA but also because it reports the same marginal effects as the multinomial logit model; and the coefficients are different to the multinomial logit only by a scale factor.

Thus the empirical analysis and use of the multinomial probit model [5.1] at this stage will answer the question; "How does educational attainment affect the probability of being in any of the employment states (not in the labour force, paid-employee, own account worker or employer) in a developing country?

The first empirical model was adapted from Demirgüc-Kunt et al. (2009) and is standard in the self-employment probability literature. As for econometric issues, tests for multicollinearity proved satisfactory. For robustness checks, the regression was run on different samples by gender and region, with satisfactory results that will be presented later in the "results" section.

4.3.2: METHODOLOGY 1.2: EDUCATION – SIMPLE PROBIT

An element of this thesis is to observe if individuals in self-employment are to be associated with higher or lower levels of human capital, and by implication infer if they are advantaged or not compared to those in paid work. Following Rees and Shah (1986) and Demirgüc-Kunt et al (2009), this thesis proposes that the likelihood of being self-employed depends on education attainment and the control variables already defined, compared to individuals in paid work. It thus makes use of a probit analysis regression specification given by:

$$P(Selfemp = 1\,|x) = P(x'_i E + x'_i X + e_i > 0|x) \qquad [5.2]$$

Where *Selfemp* is a binary indicator of employment status that takes the value one (1) for self employed individuals (whether employer or "own account workers") and zero (0) for individuals in paid work/wage employment. (Note that in this estimation, persons who are non-active i.e the unemployed and individuals not in the labour force are by implication not included in this analysis).

E is the vector that includes the different levels of education, *X* is a vector of control variables, and *e* is the error term. We estimate Equation [5.1] using a probit model $\Pr(Selfemp = 1 \mid X) = \phi\,(X'\beta)$. If self-employment in Nigeria is largely characterized by push self-employment, then it would be reasonable to expect that the likelihood of being self-employed would be higher for people with low levels of education (and hence fewer choices or opportunities) and lower for those with high levels of education.

4.3.3: METHODOLOGY 1.2: EDUCATIONAL GENDER DIFFERENCES – BLINDER-OAXACA MULTIVARIATE DECOMPOSITION

Finally, as suggested already, educational attainments and occupational statuses could have distinguishable patterns, and gender could affect such patterns, it would be of assistance to empirically investigate what would happen to the probability of being self-employed if men and women had the same endowments and coefficients in education. The final method applied here thus compares the incidence of self-employment using gender as a means of evaluation, making use of a Blinder-Oaxaca Multivariate decomposition for binary models proposed by Yun (2000) and expanded by Powers et al. (2011).

This thesis thus makes use of the Blinder-Oaxaca decomposition analysis to estimate the difference in self-employment incidence dependent on endowment differences between men and women; the foundation of the Blinder-Oaxaca specification occurs where the dependent variable is a function of a linear combination of predictors and the regression coefficients:

$$Y = F(X\beta)$$

Where Y denotes the $N \times 1$ dependent variable vector (occupational status), X is an $N \times K$ matrix of independent variables (the same ones used in our previous estimations), and β is a $K \times 1$ vector of coefficients. $F(.)$ is any once-differentiable function mapping a linear combination of X $(X\beta)$ to Y.

The mean difference in Y between groups A and B (in our case based on gender) for binary choice models such as the probit model used in this case can be decomposed as:

$$Y_A - Y_B = \phi(X_A\beta_A) - \phi(X_B\beta_B)$$

$$= \overline{[\underbrace{\phi(X_A\beta_A) - \phi(X_B\beta_A)}_{\text{Endowments/Characteristics}}]} + \overline{[\underbrace{\phi(X_B\beta_A) - \phi(X_B\beta_B)}_{\text{Coefficients}}]}$$

$$= \sum_{k=1}^{K} W_{\Delta X}^{k} \ \overline{[\Phi(X_A\beta_A) - \Phi(X_B\beta_A)]} + \sum_{k=1}^{K} W_{\Delta\beta}^{k} \ \overline{[\Phi(X_B\beta_A) - \Phi(X_B\beta_B)]} \quad [5.3]$$

This is done for both years and completes the educational assessments that this thesis will engage in; and as a result the first econometric assessment is made up of three parts:

(a) Multinomial Probit Model to show the probability for the various occupational statuses i.e non-active, paid worker, self-employed (own account worker) and employer, based on observed characteristics, particularly educational attainments - Eqn [5.1].

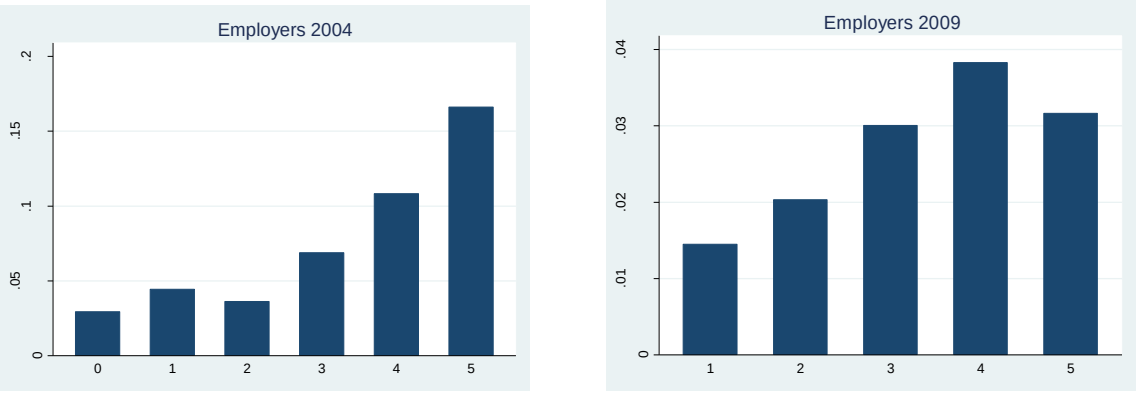
(b) Simple Probit Model to show the probability of being self-employed, based on observed characteristics, particularly on educational attainments (the same variables in the multinomial probit model) - Eqn [5.2].

(c) Blinder-Oaxaca decomposition analysis, subjecting both male and female means to the same conditions to find out how much of the self-employment incidence disparity between genders is due to differences in educational endowments - Eqn [5.3]

4.4: RESULTS OF ASSESSMENT 1 - EDUCATION

In the first assessment the thesis aims to explore how human capital, in terms of educational attainment, is linked with labour force participation. The bar charts below show the educational endowments for employers and paid workers from both years surveyed:

Figure 15: Educational Attainment for 2004 and 2009; Employers and Paid Workers



Legend: 0= Unspecified. 1 = No ed. 2 = Low ed. 3= Mid ed. 4 = High ed. 5=Very high ed.

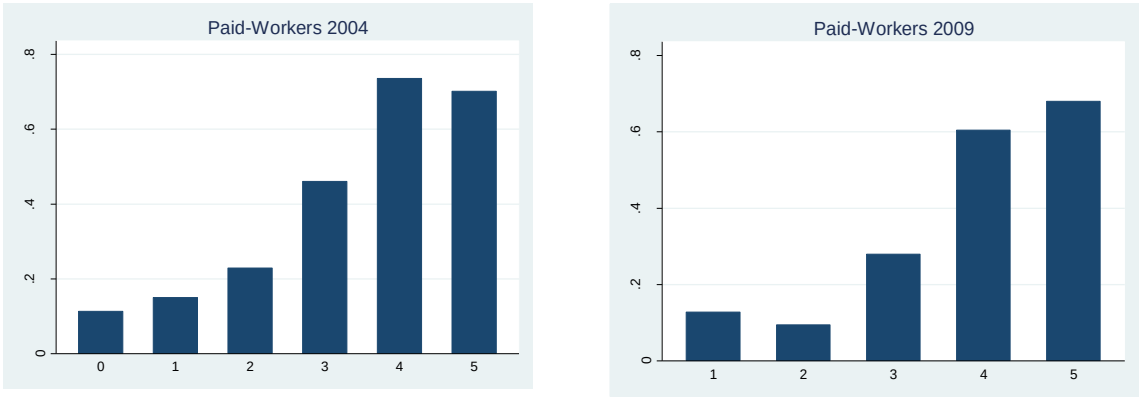


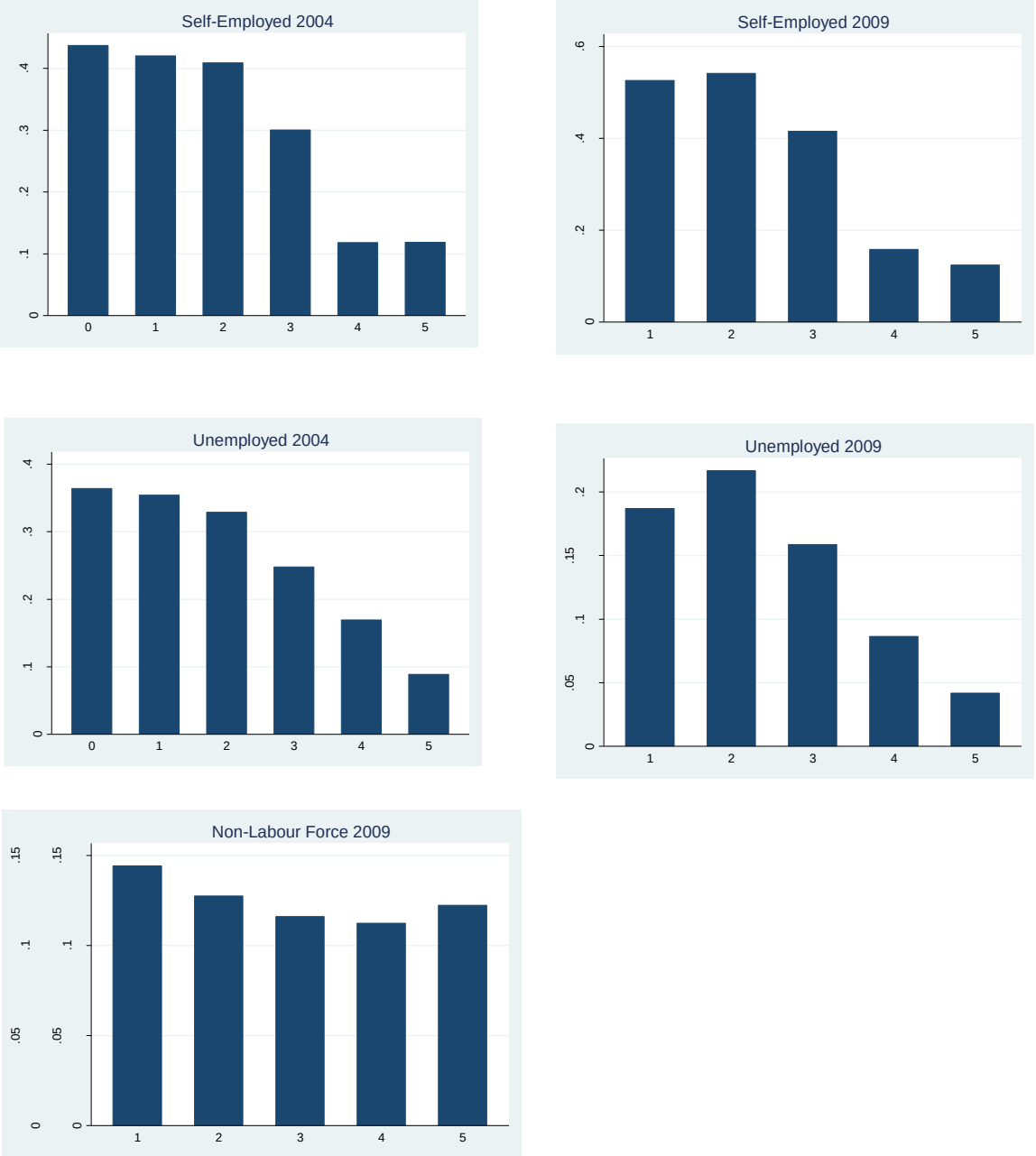
Figure 15 above is a graphical representation of the educational attainments for employers and paid workers from the 2004 and 2009 surveys. As the figures indicate, there is clearly a discernible trend for both years, as a majority of both employers and paid workers are located at the 'higher education (High ed)' and 'very high education' (Very high ed) ends of the educational distribution i.e. the right hand side of the graphs. As can also be inferred from the bar charts in Figure 15,

employers and paid workers have similar educational distributions which are quite substantial; these are individuals typically with at least a university degree.

Clearly there is an observable trend in both surveys. Figure 15 indicates that employers tend to be educated on average to high levels, as are paid workers. This seems to be rational and supports economic theory especially as the literature suggests that wage/paid workers would need such educational qualifications as a signal to their prospective employers to prove that they are suitable for employment. As for employers, the current literature seems to imply that they too would need some degree of expertise in their business to facilitate success, but this may be less closely related to educational input.

Figure 16 below is a graphical representation of the educational atainments for self employed (own account), unemployed and non-labour force individuals from the 2004 and 2009 surveys:

Figure 16: Educational Attainments for 2004 and 2009; Self-Employed, Unemployed & Non-Labour Force



Legend: 0= Unspecified. 1 = No ed. 2 = Low ed. 3= Mid ed. 4 = High ed. 5=Very high ed.

Figure 16 shows the educational endowments for self-employed (own account), unemployed and non-labour force individuals for both 2004 and 2009. Once again there is clearly a discernible trend, as a majority of individuals holding these occupational statuses are located at the 'unspecified', 'no education', 'low education' and 'medium education' ends of the educational distribution i.e. the left hand side of the graphs. Although the thesis finds that some individuals who can be classed as non-labour force in 2009 do have high educational attainments, these are a minority.

As can also be inferred from the bar charts in Figure 16, self-employed (own account), unemployed and non-labour force individuals have different patterns in educational attainments when compared to employers and paid workers. Conspicuously, there is once again an observable trend in both surveys. Information from the surveys indicates that employers and paid workers tend to be educated on average to high levels (with a positively skewed graph) unlike self-employed "own account", unemployed and non-labour force individuals, who tend to be educated on average to low levels (with a negatively skewed graph).

4.4.1: RESULTS 1.1: EDUCATION – MULTINOMIAL PROBIT

As discussed in section 5.3.1, to test the proposition that there are patterns in educational attainments and occupational status, thereby focusing on education as a proxy of privilege in terms of skill/human capital, this thesis distinguishes between various occupational statuses i.e. employers, paid workers, self - employed (own account) individuals, the unemployed and employable individuals who are not in the labour force. It makes use of a multinomial probit equation [5.1] to distinguish these groups as follows:

$$\Pr(OccStatus = 0,1,2,3 \mid X) = \phi\,(X'\beta)$$
$$P(Oi = 0,1,2,3 \mid X) = P(x'_i E + x'_i X + e_i > 0 \mid x) \qquad [5.1]$$

Where ϕ is the cumulative distribution function of the standard normal distribution, X' is a vector of explanatory/control variables already discussed in section 4.12, and β is a vector of parameters.

In this analysis *Oi* is the employment status of individual *i*,

O $\in$ { **"Non Active"** = 0 *For individuals unemployed or not in the labour force,*

"Paid Worker" = 1 *For paid workers,*

"Ordinary Self-Employed" = 2 *For self-employed "own account" workers,*

and

"Employer" = 3 *For employers*}.

The base outcome for this multinomial probit regression was the paid worker sample; the category of educational attainment that was left out of this estimation is the ‘no education’ category, for marriage it is ‘unmarried’, for region it is the ‘middle-belt’ of the country, for language it is those who do not speak a Nigerian language and for sector it is the rural sector.

All standard errors in regressions were clustered by households, and the population weights supplied in the survey were applied.

The results of estimation [5.1] on the 2004 survey are presented next:

Table 14: Results of Multinomial Probit Analysis [5.1] [Marginal Effects] - 2004 Survey

	Male				Female			
Independent Variables:	**Non Active 1**	**Paid Work 2**	**Self-Employed 3**	**Employer 4**	**Non Active 5**	**Paid Work 6**	**Self-Employed 7**	**Employer 8**
Age in years	-0.157***	0.0712***	0.0719***	0.0139***	-0.120***	0.0415***	0.0741***	0.00453***
	(0.00802)	(0.00718)	(0.00722)	(0.00214)	(0.00770)	(0.00313)	(0.00676)	(0.000713)
Age (squared)	0.00173***	-0.00076***	-0.000818***	-0.00015***	0.00127***	-0.0005***	-0.000765***	-0.0001***
	(0.000102)	(-0.00008)	(-0.00008)	(-0.00002)	(0.000101)	(-0.00004)	(-0.00008)	(-0.00009)
Urban	-0.0246	0.0351	0.00232	-0.0129	-0.0477	-0.000887	0.0486*	-0.00006
	(0.0383)	(0.0296)	(0.0262)	(0.00855)	(0.0291)	(0.0120)	(0.0261)	(0.00281)
Unspecified	0.0961	-0.0720	-0.00167	-0.0224***	0.112*	-0.0177	-0.0994**	0.00524
	(0.0908)	(0.0642)	(0.0767)	(0.00807)	(0.0600)	(0.0288)	(0.0489)	(0.0113)
Low ed	-0.00260	0.158**	-0.148**	-0.00761	-0.0479	0.0598	-0.0503	0.0384
	(0.0639)	(0.0726)	(0.0597)	(0.0143)	(0.0677)	(0.0436)	(0.0475)	(0.0262)
Mid ed	0.0776	0.230***	-0.306***	-0.00122	-0.135*	0.225***	-0.135***	0.0455**
	(0.0634)	(0.0673)	(0.0604)	(0.0160)	(0.0745)	(0.0654)	(0.0415)	(0.0680)
High ed	0.129	0.319***	-0.449***	0.000642	-0.308***	0.456***	-0.222***	0.0735*
	(0.0863)	(0.0822)	(0.0276)	(0.0176)	(0.107)	(0.107)	(0.0217)	(0.0549)
Very high ed	-0.0621	0.443***	-0.409***	0.0282	-0.512***	0.634***	-0.245***	0.123
	(0.0919)	(0.0867)	(0.0233)	(0.0370)	(0.121)	(0.141)	(0.0166)	(0.111)
Married	-0.361***	0.0992***	0.244***	0.0183**	-0.119***	0.00823	0.114***	-0.00305
	(0.0304)	(0.0329)	(0.0345)	(0.00715)	(0.0300)	(0.0139)	(0.0238)	(0.00395)
House or land	0.0572	-0.0701***	0.00257	0.0104	0.0229	-0.00127	-0.0156	-0.00605**
	(0.0393)	(0.0263)	(0.0315)	(0.0103)	(0.0291)	(0.0150)	(0.0254)	(0.00257)
Locallanguage	0.00439	-0.0230	0.0158	0.00279	-0.0622	0.0208	0.0352	0.00615
	(0.0359)	(0.0337)	(0.0376)	(0.00709)	(0.0381)	(0.0166)	(0.0324)	(0.00424)
South-East	0.0391	-0.0865***	0.0729*	-0.0255***	-0.229***	0.0385*	0.198***	-0.00755**
	(0.0429)	(0.0327)	(0.0381)	(0.00776)	(0.0392)	(0.0218)	(0.0419)	(0.00323)
South-West	0.00503	-0.0720***	0.0817**	-0.0147	-0.269***	0.0400*	0.232***	-0.00390
	(0.0377)	(0.0275)	(0.0348)	(0.00898)	(0.0329)	(0.0232)	(0.0342)	(0.00464)
North	0.0118	0.0167	-0.0504	0.0218	0.274***	-0.0228	-0.246***	-0.00519
	(0.0364)	(0.0306)	(0.0361)	(0.0158)	(0.0280)	(0.0193)	(0.0228)	(0.00416)
N	**10,206**	**10,206**	**10,206**	**10,206**	**8,191**	**8,191**	**8,191**	**8,191**
Log-pseudo likelihood	-56425771	-54282972	-54081612	-54081132	-45092930	-43684483	-43624372	-43623821
Frequency	2,932	2,624	4,197	453	4,633	1,045	2,361	152
Wald (Prob > chi2)	7281.91***	7281.91***	7281.91***	7281.91***	3108.79***	3108.79***	3108.79***	3108.79***

*** p<0.01, ** p<0.05, * p<0.1: Standard Errors in Parentheses.

Table 14 reveals that the Prob (chi2) (which is the probability of obtaining the chi-square statistic given that the null hypothesis is true) is statistically significant; and the log-pseudo likelihoods for

all the samples are comparable. Specifically, the Wald chi-square statistics, which are all significant at the 1 percent level, indicate that the regression specification is meaningful.

The regression results indicate the following across genders: age and educational attainment are consistently significant factors that influence the probability of being in an occupational status. Most relevant for this thesis, the educational variables are highly significant in predicting the probability of being in any of the employment states. The probability of being self-employed tends to fall as educational attainment increases and conversely, the probability of being in paid work tends to increase as educational attainments increase. This is consistent with a plethora of literature on self-employment and educational attainments (Maloney, 2004, Van der Sluis et al., 2008, Casson, 2005, Le, 2002).

Column 2 shows that compared to male individuals in 2004 who have no education at all, males in the same year who possess a low degree of education are 15.8% more likely to be paid workers, and those who have a medium level of education are 30.8% more likely to be in paid work. For the highly educated, the probability of being in paid work compared to the non-educated increases by 31.9%; and for the very highly educated it is higher by 44%. This confirms our findings from Figure 15 and shows that as educational attainments increase, individuals are more likely to be in paid work.

Compared to paid workers, Column 3 indicates that males in 2004 who are in self-employment are 14.8% less likely have a low degree of education (by our definitions), and those who have a medium level of education are 30.6% less likely to be in self-employment. For the highly educated, the probability of being self-employed drops by 44% and for the very highly educated it is lower by 40.9%, meaning that the more educational attainments individuals possess, the less likely they are to be self-employed.

Column 1, which represents those individuals non-active in the labour force, has educational marginal effects that are mostly insignificant, while Column 4 shows that for male employers in

2004; most of the educational variables are insignificant except that individuals who did not specify an education are significantly unlikely to be employers.

Column 5 shows that for females in the 2004 survey compared to paid female workers, the probability of being part of the non active workforce decreases as educational attainments increase. Females in 2004 who possess a medium degree of education are 13.5% less likely to be non active members of the labour force and those who have a high degree of education are 30.8% less likely to be non active workers. The probability of being a non-active female workers drops by 51.2% for the very highly educated, confirming that the lower the educational attainments of females in the survey, the more likely they are to be non-active members of the workforce.

Column 6 shows that compared to female individuals in 2004 who have no education at all, females in the same year who possess a medium degree of education are 22.5% more likely to be paid workers and those who have a high level of education are 45.6% more likely to be in paid work. For the very highly educated females in 2004, the probability of being in paid work compared to the non-educated increases by 63.4%, and confirms that as educational attainments increase, female individuals in the 2004 survey are more likely to be in paid work.

Column 7 indicates that females in 2004 who are in self-employment, compared to paid workers, are 13.5% less likely have a medium degree of education, those who have a high level of education are 22.2% less likely to be in self-employment, and for the very highly educated the probability of being self-employed compared to being in the paid group drops by 24.5%. This means that the more educational attainments female individuals possess, the less likely they are to be self-employed.

Column 8 shows that for female employers in 2004, only the medium (4.5%) and highly educated (7.3%) variables are significant at the 5 and 10 percent levels respectively; this implies that female employers in 2004 have a sizeable probability of having significant educational attainments.

The control variables used do not reveal any distinctive patterns. As a whole, the regression estimates from this assessment seem to indicate that the higher the educational attainment of individuals, the lower the probability of being in self-employment. Estimates show that more educated individuals are either in wage employment or are employers; this implies that some measure of education might be needed to move to these occupational statuses. This is especially true for females, and would seem to highlight that the kind of "own account self-employment" found in this survey in line with literature is mostly *pushed* self-employment. Individuals with high educational skills are opting away from the self-employment category.

Next, the thesis will perform the same assessment [5.1] on the 2009 survey data in Table 15.

As before, the base outcome for this multinomial probit regression was the paid worker sample. The category of educational attainment that was left out of this estimation is the 'no education' 'category (an estimation leaving out the 'high education' category is provided in the appendix section as a robustness check), for marriage it is 'unmarried', for region it is the mid-belt of the country, for language it is those who do not speak a Nigerian language and for sector it is the rural sector.

The results of estimation [5.1] on the 2009 survey are presented next:

Table 15: Results of Multinomial Probit Analysis [5.1] [Marginal Effects] -2009 Survey

	Male				Female			
Independent Variables:	**Non Active 1**	**Paid Work 2**	**Self-Employed 3**	**Employer 4**	**Non Active 5**	**Paid Work 6**	**Self-Employed 7**	**Employer 8**
Age in years	-0.0846***	0.0403***	0.0431***	0.00132	-0.0901***	0.0364***	0.0523***	0.00146***
	(0.00164)	(0.00191)	(0.00210)	(0.000873)	(0.00200)	(0.00150)	(0.00216)	(0.000489)
Age (squared)	0.000936***	-0.00042***	-0.00051***	-0.00009	0.00094***	-0.0004***	-0.000533***	-0.00009
	(-0.00002)	(-0.00002)	(-0.00002)	(-0.00001)	(-0.00002)	(-0.00001)	(-0.00002)	(-0.00005)
Urban	0.0181***	-0.0474***	0.0352***	-0.00596**	0.0492***	-0.00813	-0.0468***	0.00570***
	(0.00556)	(0.00670)	(0.00722)	(0.00262)	(0.00735)	(0.00597)	(0.00802)	(0.00184)
Low ed	-0.0587***	-0.0415**	0.0916***	0.00858	-0.0446***	-0.0274**	0.0658***	0.00621
	(0.0137)	(0.0169)	(0.0171)	(0.00850)	(0.0149)	(0.0134)	(0.0161)	(0.00605)
Mid ed	-0.0263*	0.127***	-0.117***	0.0161**	-0.0319**	0.164***	-0.139***	0.00645
	(0.0150)	(0.0167)	(0.0168)	(0.00744)	(0.0153)	(0.0133)	(0.0160)	(0.00527)
High ed	0.0709***	0.331***	-0.412***	0.00950	0.0262	0.474***	-0.516***	0.0160*
	(0.0190)	(0.0209)	(0.0115)	(0.00875)	(0.0209)	(0.0230)	(0.00845)	(0.00975)
Very high ed	0.0203	0.335***	-0.367***	0.0116	-0.0353	0.539***	-0.485***	0.0193***
	(0.0229)	(0.0256)	(0.0150)	(0.0116)	(0.0308)	(0.0328)	(0.0113)	(0.00140)
Married	-0.275***	0.0434***	0.189***	0.0426***	-0.221***	-0.0004	0.208***	0.0135***
	(0.00912)	(0.00970)	(0.0102)	(0.00210)	(0.00944)	(0.00803)	(0.00954)	(0.00146)
House or land	0.0761***	-0.0285*	-0.0408**	-0.00682	0.0693***	-0.0163	-0.0441**	-0.0088***
	(0.0160)	(0.0149)	(0.0173)	(0.00531)	(0.0178)	(0.0124)	(0.0178)	(0.00219)
Locallanguage	-0.0342***	0.0485***	-0.0194	0.00510	0.00427	0.132***	-0.150***	0.0139***
	(0.0133)	(0.0134)	(0.0138)	(0.00449)	(0.0116)	(0.00604)	(0.0116)	(0.00185)
South-East	0.00645	-0.109***	0.0861***	0.0162***	0.0173	-0.0116	0.00855	-0.0142***
	(0.00827)	(0.00934)	(0.0107)	(0.00454)	(0.0115)	(0.00840)	(0.0119)	(0.00244)
South-West	-0.00796	-0.122***	0.0624***	0.0675***	-0.0276**	-0.0824***	0.118***	-0.00769**
	(0.00757)	(0.00961)	(0.0104)	(0.00464)	(0.0109)	(0.00770)	(0.0113)	(0.00363)
North	-0.00745	-0.00893	-0.0611***	0.0775***	0.289***	-0.0177**	-0.257***	-0.0152***
	(0.00902)	(0.0103)	(0.0116)	(0.00815)	(0.0144)	(0.00857)	(0.0128)	(0.00168)
N	**58,996**	**58,996**	**58,996**	**58,996**	**46,697**	**46,697**	**46,697**	**46,697**
Log-pseudo likelihood	-35236664	-34885114	-34857172	-34857005	-24498432	-24727632	-24690906	-24648901
Frequency	14,877	18,741	23,209	2,169	15,496	9,050	21,434	717
Wald (Prob > chi2)	12206.1***	12206.1***	12206.1***	12206.1***	10089***	10089***	10089***	10089***

*** p<0.01, ** p<0.05, * p<0.1: Standard Errors in Parentheses.

Once again, Table 15 reveals that the Prob (chi2) is statistically significant; and the log-pseudo likelihoods for all the samples are comparable. This applies particularly to the Wald chi-square statistics, which are all significant at the 1 percent level, indicating that the regression specification is meaningful.

The regression results indicate the following. Once more, across genders, age and educational attainment are consistently significant factors that influence the probability of being in an occupational status. Particularly, as proposed in the research objectives, the educational variables are highly significant in predicting the probability of holding any of the employment statuses. The probability of being self-employed tends to fall as educational attainment increases and conversely, the probability of being in paid work tends to increase as educational attainments increase. This is consistent with the results from the 2004 survey and a large body of literature on self-employment and educational attainments.

Column 2 shows that compared to male individuals in 2009 who have no education at all, males in the same year who have a medium level of education are 12.7% more likely to be in paid work. For the highly educated, the probability of being in paid work, compared to the non-educated, increases by 33.1%; and for the very highly educated it is higher by 33.5%. This confirms our findings from Table 14 and the 2004 survey thereby showing that as educational attainments increase, individuals are more likely to be in paid work.

Column 3 indicates that males in 2009 who are in self-employment compared to paid workers, are 9% more likely have a low degree of education (by our definitions), and those who have a medium level of education are 11.7% less likely to be in self-employment. For the highly educated, the probability of being self-employed, compared to the paid non-educated group, drops by 41.2% ;and for the very highly educated it is lower by 36.7%. This means that once again, the more educational attainments individuals possess, the less likely they are to be self-employed.

Column 4 also shows that for male employers in 2009, most of the educational variables are non-significant/insignificant, except for the medium education variable that is significant at the 5% level;and with a positive value, indicating 1.6% additional probability for male employers in this survey to have a medium level of education.

Column 5 shows that for females in the 2009 survey, compared to paid female workers, the probability of being part of the non-active workforce decreases as educational attainments increase. Females in 2009 who possess a low degree of education are 4.5% less likely to be non-active members of the labour force; and those who have a medium degree of education are 3.2% less likely to be non-active workers.

Column 6 shows that compared to female individuals in 2009 who have no education at all, females in 2009 who possess a medium degree of education are 16.4% more likely to be paid workers and those who have a high level of education are 47.4% more likely to be in paid work. For the very highly educated females in 2009, the probability of being in paid work compared to the non-educated increases by 53.9%, and confirms that as educational attainments increase, female individuals in the 2009 survey are more likely to be in paid work.

Compared to paid workers, Column 7 indicates that females in 2009 who are in self-employment are 13.9% less likely have a medium degree of education (by our definitions), those who have a high level of education are 51.6% less likely to be in self-employment; and for the very highly educated, the probability of being self-employed compared to being in the paid group drops by 48.5%. This means that the more educational attainments female individuals possess, the less likely they are to be self-employed.

Column 8 shows that for female employers in 2009, only the highly educated (1.6%) and very highly educated (1.93%) variables are significant at the 5 and 1 percent levels respectively; this implies that female employers in 2009 have a considerable probability of having significant educational attainments.

The control variables used do not reveal any distinctive patterns except that self-employed individuals tend to be married, and the ability to speak a local language does not seem to have a positive relationship with self-employment status. On the contrary, paid workers appear to have a significantly higher probability of being speakers of the local language.

To summarise, the regression estimates from this assessment seem to indicate that the higher the educational attainment of individuals, the lower the probability of being in self-employment. More educated individuals are either in wage employment or are employers implying that some measure of education might be needed to move to these occupational statuses. This is especially true for females, and would seem to highlight that the kind of "own account self-employment" found in this survey consistent with literature is mostly *pushed* self-employment, as individuals with high educational skills are opting away from the self-employment category.

4.4.2: RESULTS 1.2: EDUCATION – SIMPLE PROBIT

As discussed in section 2.3.1, since an intention of this thesis is to observe if individuals in self-employment are to be associated with higher or lower levels of human capital, and by implication infer if they are advantaged or not compared to those in paid work, this thesis thus makes use of a probit analysis regression specification given by:

$$P(Selfemp = 1\,|x) = P(x'_i E + x'_i X + e_i > 0|x) \qquad [5.2]$$

Where *Selfemp* is a binary indicator of employment status that takes the value one (1) for self employed individuals (whether employer or "own account workers") and zero (0) for individuals in paid work/wage employment (Note that here those who are non-active i.e the unemployed and those not in the labour force are by implication not included in this analysis).

E is the vector that includes the different levels of education, *X* is a vector of control variables, and *e* is the error term. All regressions were clustered by households and population weights supplied in the survey were used.

The Wald chi-square statistics, which are significant at the 1 percent level, indicate that the regression specification is meaningful. The Pseudo R-squared shows that both samples give a good fit. The R-squared in this case and especially for both years of the female samples at 22 % are better than the R-squared of Demirgüc-Kunt et al. (2009); and those of the male sample at 15 % and 11 % are quite reasonable. This is further supported by the significance of the regression estimates, in particular for the education variables, which are all almost significant at the 1 percent level. The results of estimation [5.2] on both the 2004 and 2009 surveys are presented below;

Table 16: Results of Simple Probit Analysis [Marginal Effects]

Independent Variable	Male Sample 2004 1	Female Sample 2004 2	Male Sample 2009 3	Female Sample 2009 4
Age in years	-0.0324***	-0.0439***	-0.0115	-0.00780
	(0.0122)	(0.0130)	(0.00718)	(0.00640)
Age (squared)	0.000313**	0.000496***	0.00009	0.00009
	(0.000141)	(0.000162)	(0.00008)	(0.00008)
Urban	-0.0187	0.0375	0.0549**	-0.0341*
	(0.0287)	(0.0395)	(0.0236)	(0.0205)
Unspecified	0.0897	-0.0332		
	(0.0783)	(0.0956)		
Low ed	-0.190**	-0.206**	0.0713	0.0536
	(0.0807)	(0.104)	(0.0471)	(0.0373)
Mid ed	-0.348***	-0.512***	-0.155***	-0.212***
	(0.0772)	(0.0908)	(0.0437)	(0.0421)
High ed	-0.546***	-0.682***	-0.461***	-0.684***
	(0.0356)	(0.0490)	(0.0406)	(0.0313)
Very high ed	-0.524***	-0.706***	-0.423***	-0.661***
	(0.0240)	(0.0193)	(0.0560)	(0.0355)
Married	0.0494	0.0863**	0.0123	0.0730**
	(0.0476)	(0.0399)	(0.0397)	(0.0337)
House or land	0.0377	-0.0127	0.00542	0.0101
	(0.0341)	(0.0476)	(0.0166)	(0.0226)
LocalLanguage	0.0206	-0.0114	-0.0397	-0.191***
	(0.0413)	(0.0531)	(0.0412)	(0.0190)
South-East	0.135***	0.0442	0.120***	0.0161
	(0.0445)	(0.0551)	(0.0418)	(0.0310)
South-West	0.120***	0.0671	0.0777**	0.126***
	(0.0376)	(0.0598)	(0.0396)	(0.0336)
North	-0.0766*	-0.183**	-0.0508	-0.0913**
	(0.0444)	(0.0929)	(0.0419)	(0.0416)
N	7,274	3,558	44,119	31,201
Log-pseudo likelihood	-28860396	-14908950	-17654502	-9935626.1
Pseudo R2	0.15	0.22	0.11	0.22
Wald x2	440.47***	306.24***	377.77***	798.18***

* $p<0.1$; ** $p<0.05$; *** $p<0.01$: Standard Errors in Parentheses.

Table 16 above shows the results of estimation [5.2] on both the 2004 and 2009 surveys. The category of educational attainment that was left out of this estimation is 'no education', for marriage it is 'unmarried', for region it is the mid-belt of the country and for sector, it is the rural

sector. The results indicate that the probability of being in self-employment falls as educational attainment increases, especially for women. These regression estimates and standard errors are robust and consistent with different variations of the estimation.

The regression results indicate the following. First, in both years and across genders, age and educational attainment are the most consistently significant factors that influence the probability of being either self-employed or an employer. The educational variables are highly significant in predicting the probability of being in any of the employment states. The probability of being self-employed tends to fall as educational attainment increases. This agrees with (Maloney, 2004, Van der Sluis et al., 2008, Casson, 2005, Le, 2002).

Column 1 indicates that males in 2004 who possess a low degree of education are 19% less likely to be in self-employment, compared to those who are not educated, and those who have a medium level of education are 34.8% less likely to be in self-employment. For the highly educated, the probability of being self-employed compared to the non-educated drops to 54.6% and for the very highly educated it is lower by 52.4%.

Column 3 shows that for males in 2009, the same pattern is observed generally, apart from the low education variable, which becomes positive but insignificant in this survey. However, men who have a medium amount of education are 15.5% less likely to be in self-employment compared to those with no education. For the highly educated and very highly educated, the figures are 46.1% and 42.3% respectively, highlighting the negative relationship in general between self-employment and education for males.

For females in both years surveyed the same pattern is repeated. Column 2 indicates that compared to females who have no education, those with low, medium, high and very high educational attainments are 20.6%, 51.2%, 68.2% and 70.6 % less likely to be in self-employment respectively. Column 4 repeats that pattern for 2009, with female medium, highly and very highly educated individuals being 21.2%, 68.4% and 66.1 % respectively less likely than the non-educated to be in

self-employment.

Second, Mid ed (Medium Educational Level) is crucial across genders in both surveys and seems to be the traditional turning point where self-employment becomes negatively correlated with education, indicating that individuals need at least some basic form of education to move into paid employment.

Also for women the effects of education are more pronounced especially as educational levels increase. Women who are highly and very highly educated are the most probable not to be self-employed for both years. For men the educational influences on employment choice are smoother and more uniform, whereas for women these effects are jerkier. Education is thus very significant in determining employment statuses.

The control variables are as expected in the literature, with marriage being significant for women in the survey; the literature review has already revealed the findings of Maloney (2004) in Latin America that married women seemed to move more into self-employment so as to enable them to be able to perform household- related tasks at their own time/leisure.

Regional Location controls also indicate in some cases that the south west and east of the country (which are the economic hubs) have a greater probability of self-employment movement rate compared to the mid-belt and northern regions which is to be expected, as the north of the country is substantially poorer than other regions.

The regression estimates from these education-related analyses so far seem to indicate that the higher the educational attainment of individuals, the lower the probability of being in self-employment. More educated individuals are to found in wage employment according to this analysis; and this is especially true for women. It would seem to highlight once again that the kind

of self-employment found according to this survey is mostly *pushed* self-employment, as individuals with high educational skills are opting away from this employment category.

4.4.3: RESULTS 1.3: EDUCATIONAL GENDER DIFFERENCES – BLINDER-OAXACA MULTIVARIATE DECOMPOSITION

The final education methodology compares the incidence of self-employment between the two years of the survey (2004 and 2009), using gender as a means of evaluation, making use of a Blinder-Oaxaca Multivariate decomposition for binary models proposed by Yun (2000) and expanded by Powers et al. (2011). The foundation of the Blinder-Oaxaca specification occurs where the dependent variable is a function of a linear combination of predictors and the regression coefficients:

$$Y = F(X\beta)$$

Where Y denotes the $N \times 1$ dependent variable vector, X is an $N \times K$ matrix of independent variables (the same ones used in our previous estimations), and β is a $K \times 1$ vector of coefficients. $F(.)$ is any once-differentiable function mapping a linear combination of X $(X\beta)$ to Y. The mean difference in Y between groups A and B for binary choice models such as the probit model used in this case can be decomposed as:

$$Y_A - Y_B = \phi(X_A\beta_A) - \phi(X_B\beta_B)$$

$$= \overline{[\underbrace{\phi(X_A\beta_A) - \phi(X_B\beta_A)}_{\text{Endowments/Characteristics}}]} + \overline{[\underbrace{\phi(X_B\beta_A) - \phi(X_B\beta_B)}_{\text{Coefficients}}]}$$

$$= \sum_{k=1}^{K} W_{\Delta X}^{k} \ \overline{[\Phi(X_A\beta_A) - \Phi(X_B\beta_A)]} + \sum_{k=1}^{K} W_{\Delta\beta}^{k} \ \overline{[\Phi(X_B\beta_A) - \Phi(X_B\beta_B)]} \quad [5.3]$$

The results of estimation [5.3] are presented next;

Table 17: Results of Blinder-Oaxaca Decomposition – Endowment/Characteristic Differences

Endowment/Characteristic Differences		Male/Female 2004	Male/Female 2009
	Independent Variables	1	2
	Unspecified	-0.004	
		(0.003)	
	Low ed	0.001***	-0.006***
		(0.000)	(0.001)
	Mid ed	0.020***	-0.004***
		(0.002)	(0.000)
	High ed	0.017***	-0.025***
		(0.001)	(0.001)
	Very high ed	0.009***	-0.011***
		(0.001)	(0.000)
	Age in years	0.001***	-0.018***
		(0.000)	(0.002)
	Age (squared)	0.003***	0.010***
		(0.000)	(0.002)
	Urban	-0.001	-0.000***
		(0.001)	(0.000)
	Married	-0.001**	0.000
		(0.000)	(0.001)
	House or land	-0.001**	-0.000
		(0.000)	(0.000)
	LocalLanguage	-0.001	-0.005***
		(0.001)	(0.001)
	South - East	0.004**	0.001***
		(0.002)	(0.000)
	South - West	0.007***	-0.006***
		(0.002)	(0.001)
	North	0.018***	-0.005***
		(0.004)	(0.000)
N		10,832	75,320

*** p<0.01, ** p<0.05, * p<0.1: Standard Errors in Parentheses.

Table 17 reports the endowment/characteristic results of the Blinder-Oaxaca decomposition estimation [5.3]; these results explain the sources of difference in the likelihood of being self-employed between the male and female samples. Note that the endowments/characteristics effect tells us the explained variation in self-employment incidence due to endowments, while the coefficient effects (presented next) tell us the unexplained variation which might be due to discrimination or other unknown reasons.

The results indicate that for both 2004 and 2009, the endowment/characteristic differences in education between males and females explain the dissimilarity in the likelihood of being self-employed to a large extent – as can be seen by the constant significance of the educational endowment/characteristic independent variables at the one percent level.

For the sake of clarity, the estimates will be expressed as percentages: overall, educational characteristics/endowments account for about 4.3% of the difference in self-employment probability between men and women in 2004. Specifically, if men and women had the same endowments in low, medium, high and very high education in that year; the dissimilarity in employment status would fall by about 0.01 % , 0.2%, 1.7%, and 0.09% respectively.

In 2009, if men and women had the same endowments in education the dissimilarity in employment status would rise by about 4.4%. Specifically, if men and women had the same endowments in low, medium, high and very high education in that year; the dissimilarity in employment status would rise by about 0.06 % , 0.04%, 2.5%, and 0.11% respectively.

The results so far bear out that indeed there are patterns in the incidence of occupational status - in this particular case self-employment; and educational attainments. The next Table presented shows the coefficient results of the Blinder-Oaxaca decomposition estimation [5.3];

Table 18: Results of Blinder-Oaxaca Decomposition – Coefficient Differences

Coefficient Differences		Male/Female 2004	Male/Female 2009
	Independent Variables	1	2
	Unspecified	-0.030***	
		(0.011)	
	Low ed	-0.028*	0.002
		(0.015)	(0.005)
	Mid ed	-0.074***	0.041***
		(0.022)	(0.007)
	High ed	-0.019***	0.015***
		(0.007)	(0.002)
	Very high ed	-0.011**	0.002***
		(0.004)	(0.000)
	Age in years	-0.830***	-0.046
		(0.267)	(0.065)
	Age (squared)	0.479***	-0.012
		(0.147)	(0.032)
	Urban	0.002	0.031***
		(0.008)	(0.004)
	Married	0.002	-0.031***
		(0.012)	(0.008)
	House or land	-0.000	-0.000
		(0.003)	(0.001)
	LocalLanguage	0.018	0.092***
		(0.016)	(0.010)
	South - East	-0.018*	0.016***
		(0.010)	(0.002)
	South - West	0.001	-0.021***
		(0.007)	(0.004)
	North	-0.008	0.001
		(0.007)	(0.001)
Summary	Endowments	0.075***	-0.069***
		(0.004)	(0.001)
	Coefficients	0.011	-0.091***
		(0.010)	(0.003)
N		10,832	75,320

*** p<0.01, ** p<0.05, * p<0.1: Standard Errors in Parentheses.

Table 18 above shows the coefficient results of the gender-based Blinder-Oaxaca decomposition estimation [5.3]. As with educational coefficients, they are once again very significant (the signs are interpreted in the opposite of the endowments section). Column 1 shows that for 2004, educational coefficients account for as high as 0.3%, 0.28%, 0.74 %, 0.19 % and 0.11 % of the

gender disparity from unspecified, low medium, high and very high educational attainments respectively; while Column 2 shows that the gender coefficient effect would in this case be reduced by 0.41%, 0.15%, 0.02% for the medium, high and very high education attainment individuals respectively.

These results from Table 18 highlight the importance of education in the probability of self-employment. Once again, the results so far bear out that indeed there are patterns in the distribution of occupational status - in this case self-employment and educational attainments. We have found that educational differences are significant, and that educational coefficients dominate the contribution to the overall effect. As pointed out in previous estimations, in this thesis, by using the multinomial probit and simple probit estimations, we also confirmed that there exists a significant link between all labour force participation statuses and educational attainments.

4.4.4: SUMMARY OF RESULTS - LABOUR FORCE PARTICIPATION AND EDUCATION

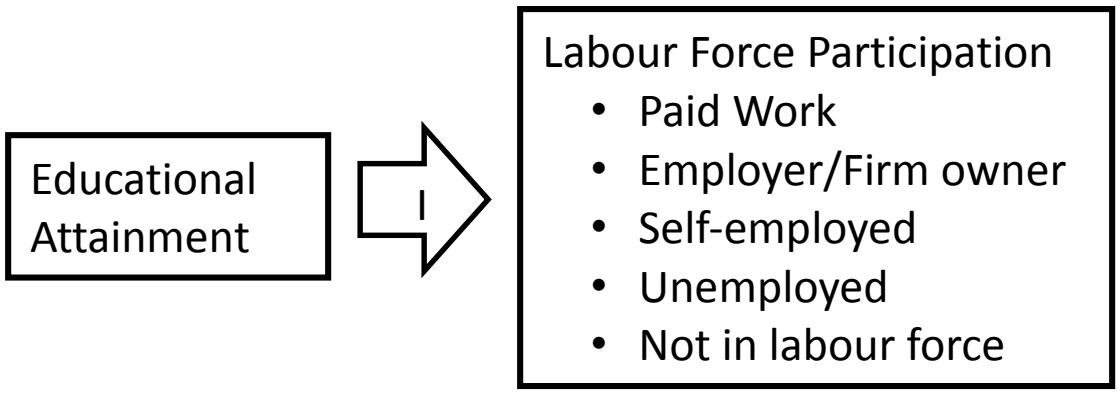


Figure 17: Conceptual Model (Education and Labour Force Participation)

In this section, this thesis analyses the distribution of labour force participation/occupational statuses based on educational attainments. It finds that higher educational levels reduce the probability of individuals being in self-employment. It also finds that paid workers and employers have substantial educational endowments relative to other individuals in the survey; the effects it finds are very significant and are more pronounced for women. It also finds that self-employed individuals are not very different from the non-active members of the workforce, and reducing the gender educational gap would reduce the employment status differential significantly between men and women.

This study crucially finds that education makes women more probable to be employers of labour. Earlier empirical studies have not been quite so clear on this issue, probably due to the lack of adequate micro-level data from developing countries on these gender differences. To the best of this researcher's knowledge, a link between higher educational attainments and employer probability status for women in developing countries has not been adequately documented.

4.5: LABOUR WAGE

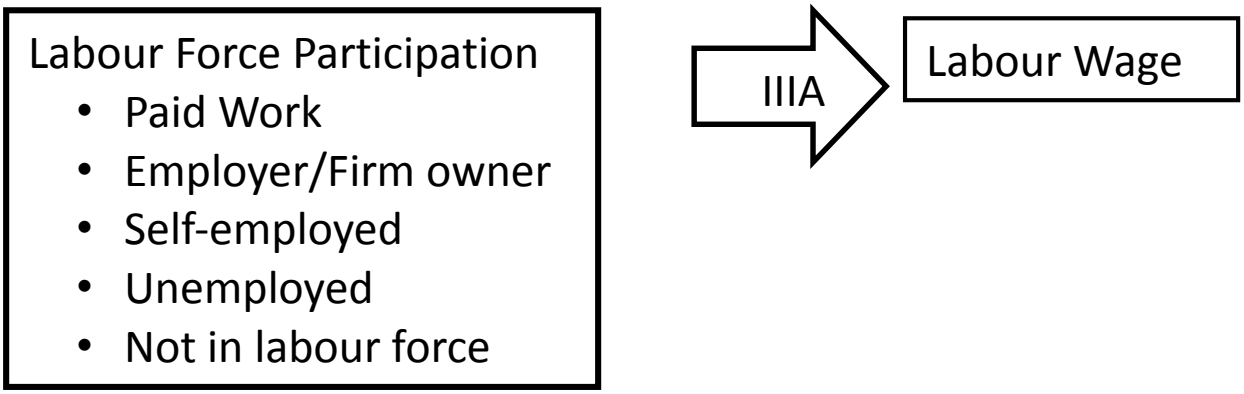


Figure 18: Conceptual Model (Labour Force Participation and Labour Wage)

Since individuals should seek to maximise individual utility by opting for the employment option that gives the highest possible labour wage stream, the second assessment seeks to understand if belonging to an occupational category can influence labour wage in the form of income premiums or penalties.

If it does i.e. there is a discernible relationship between labour and occupational status after we have conditioned for other observable factors, then individuals can report differing incomes/earnings even if they possess the same characteristics and skills as their colleagues in a different occupational class**.**

In addition, the literature on developing countries (reviewed in section 2.4.1) seems to suggest that self-employed individuals in developing countries will earn less than those in paid-employment even if they have similar characteristics. To test the proposition that occupational status influences labour wage, and the implications this has for push or pulled self-employment, this thesis examines the premiums/penalties conditional on individual characteristics for paid-employment, self-employment and employers, restricted to individuals who have entered the working labour force.

4.5.1: METHODOLOGY 2.1: SELF-EMPLOYMENT & EMPLOYER PREMIUMS/PENALTIES – HECKMAN MODEL

i. The Heckman model deals with a continuous outcome that is observed only when another equation determines that the observation is selected and the errors of the two equations are allowed to be correlated. In this case, individuals can earn a labour wage only if they are first in employment, and thus labour wage for an occupational status might be correlated with the decision to participate in and be employed by the labour market initially (Heckman, 1979). Heckman won the Economics Nobel Prize in 2000 for this work.

This thesis makes use of the Heckman model because since we aim to estimate the conditional annual labour wage/income amongst occupations, we must note that people who work are selected non-randomly from the population, thus meaning we have access to annual income observations only for those who work; and estimating the determinants of wages from the subpopulation who work may thus introduce a selection bias.

Selection bias refers to the selection of individuals, groups or data for analysis such that proper randomisation is not achieved, thereby ensuring that the sample obtained is not representative of the population intended to be analysed, with implications for the results. In this case, we might have a sampling bias expressing itself as a self-selection bias that theoretically arises in any situation in which individuals select themselves into a group (specifically being employed as opposed to being non-active in the labour force), causing some members of the population to be less likely to be included than others.

The Heckman correction solves this potential selection bias and takes place in two stages.

1. In the first stage, the thesis formulates a model, based on economic theory, for the probability of working as opposed to belonging to the "non- active" labour force. The canonical specification for this relationship is the initial probit equation:

$$\Pr(Employed = 1 \mid W) = \phi\,(W'\beta)$$
$$P(Employed = 1 \mid W) = P(x'_i E + x'_i X + e_i > 0 \mid W) \qquad [5.4]$$

Where $Employed$ indicates employment ($Employed$ = 1 if the respondent is employed, i.e. the individual has an employment status of "employer, self-employed or paid worker" and $Employed$ = 0 otherwise, i.e. the individual has the employment status of "unemployed or not in labour force"), Thus the variable W implies selection but not income, *E* is the vector that includes the different levels of education, *X* is a vector of control variables, and *e* is the error term, all identical to our previous estimations [5.1] and [5.2].

As before, $X'$is a vector of explanatory variables, β is a vector of parameters, and ϕ is the cumulative distribution function of the standard normal distribution. The estimates from this model yield results that can be used to predict the employment probability for each individual given each individual's observable characteristic.

2. In the second stage, the Heckman procedure corrects for self-selection by incorporating a transformation of these predicted individual probabilities as an additional explanatory variable. The wage equation is now specified,

$$Y_i = x_i\beta + \delta Se_i + \eta Em_i + \mu_i \qquad [5.5]$$

Where Y_i denotes logged annual income (labour wage) of workers[42], Explanatory variables x_i comprise standard human capital formation literature variables (age, age squared, sector, sex, marital status, educational attainment – the same as in the first assessment, being able to speak the local language, credit constraint, region as well as dummies for religion); these are essentially the same control variables as in [5.2] with the addition of the religion variable – this is because certain occupations could be potentially encouraged or frowned upon by one's religious peers/network.

The dummies Se_i and Em_i take the value of one (1) if person *i* is a self-employed "own account" worker or employer respectively. The estimated coefficients $\hat{\delta}$ and $\hat{\eta}$ are interpreted as a measure of the Heckman corrected conditional earnings premium/penalty experienced by the self-employed and employers respectively, compared to formal wage earners or paid workers.

We can thus denote Y_i^* as the underlying wage offer, which is not observed if the respondent does not work. The conditional expectation of wages given the person works is then:

[42] The basic wage equation can be traced back to the 1974 Jacob Mincer model (also called "the human capital accumulation model") of earnings and is one of the cornerstones of empirical economics. The equation predicts income based on measures of schooling and post school investment. The basic Mincer equation is estimated:

$$\ln[\mathrm{Y(s,x)}] = \alpha_o + r_s s + r_j x + r_j x^2 + \varepsilon$$

Where $\ln[\mathrm{Y(s,}x\mathrm{)}]$ is log of wage w at schooling level s and work experience x.

$$E[Y_i|x_i, W = 1] = x_i\beta + \delta Se_i + \eta Em_i + E[\mu_i|x_i, W = 1]$$

Under the assumption that the error terms are jointly normal, we thus have:

$$E[Y_i|x_i, W = 1] = x_i\beta + \delta Se_i + \eta Em_i + \rho\sigma_\mu\lambda(W'\beta) \quad [5.6]$$

Where ρ is the correlation between unobserved determinants of propensity to work E and unobserved determinants of wage offers μ_i, the variable W implies selection but not income, σ_u is the standard deviation of μ_i, and λ is the inverse Mills ratio evaluated at $W'\beta$. This equation thus solves the sample selection that can be viewed as a form of omitted-variables bias, as conditional on x_i, δ, η and on λ as if the sample is randomly selected.

In the estimations conducted by the thesis, Y_i will denote logged annual labour wage of workers[43], explanatory variables x_i comprise standard human capital formation literature variables (age, age squared, sector, sex, marital status, educational attainment – the same as in the first assessment, credit constraints, ability to speak a Nigerian language, region, as well as dummies for religion). The dummies Se_i and Em_i take the value of one (1) if person i is a self-employed worker or employer respectively. The estimated coefficients $\hat{\delta}$ and $\hat{\eta}$ are thus interpreted as a measure of the conditional earnings premium/penalty experienced by the self-employed and employers respectively compared to formal paid work/wage earners.

[43] This thesis makes use of "annual labour wages of individuals in the logged form"; the reason for this is explained in section 4.6.

4.5.2: METHODOLOGY 2.3: SELF-EMPLOYMENT & EMPLOYER PREMIUMS/PENALTIES – QUANTILE REGRESSIONS

The econometric literature notes that Heckman corrected Ordinary Least Squares (OLS) model estimates might not give a full picture of the entire income spectrum, and could be influenced by a few "superstars" or fail to reflect the general distribution in labour wages. Hence this thesis makes use of quantile regressions in addition to the Heckman estimates to calculate the self-employment and employer premiums or penalties conditional on observable individual characteristics.

In addition, while the OLS regression curve gives a grand summary for the averages of the distribution, quantile regressions are more advantageous as they compute several different regression curves corresponding to the various percentage points specified, thus giving a more complete picture of the set. Thus this thesis sorted the self-employed "own account" workers, employers and paid workers into percentiles at the .01,.05,.10,.20,.30,.40, .50,.60.70,.80,.90,.95 and .99 positions on the income distribution and compared them to each other for more insight into the investigation and to account for heterogeneity in occupational status labour wages.

4.5.2.1: Reason for Quantile Regressions

For testing the hypothesis of heterogeneous returns to occupational status across the distribution, this thesis will make use of quantile regressions. The reason for this is that quantile regressions as introduced in Koenker and Hallock (2001) may be viewed as a natural extension of the classical least squares estimation on conditional mean models to the estimation of an ensemble of models for conditional quantile functions. While the regression curve gives a grand summary for the averages of the distribution corresponding to the set of x's, quantile regressions compute several different

regression curves thus giving a more complete picture of the set (Koenker and Hallock, 2001).

Ordinarily, as specified by the superstar model of Rosen (1981), normal OLS regressions could be influenced by the earnings of a few 'superstars' or 'underperformers' and as with the mean indicator would give an incomplete picture of a single distribution. It is a well-known fact in the economic literature that mean(s) welfare indicators might not really characterise a majority of the sample analysed. The greatest advantage of quantile regressions is their capacity to illustrate depictions of the relevant relationships across different quantiles of the distribution and not solely at the mean.

Therefore to provide a complete view of the division(s) across percentage points on the income distribution, quantile regressions will be used for this thesis. The quantile expression for any worker i at the τ^{th} quantile of the Y distribution conditional on observables is expressed as:

$$F_{yi}^{-1}(\tau|x_i) = x_i\beta(\tau) + \delta(\tau)Se_i + \eta(\tau)Em_i + \mu_i, \quad \forall\tau \in [0,1]. \qquad [5.7]$$

The percentage points that are observed in the estimations in this thesis are:

$$.01, .05, .10, .20, .30, .40, .50, .60., .70, .80, .90, .95 \; and \; .99.$$

The insight from this is to determine if individuals in any of the employment states are bound to experience a labour wage premium or penalty relative to another employment option at any particular point on the welfare distribution. Note that this model also allows this thesis to account for heterogeneity in both sectors, an analysis that provides very insightful results, as proposed by recent authors and researchers in the field (Günther and Launov, 2012). This model was adapted from Bargain and Kwenda (2011) and extended to fit this study.

The effects of the covariates hence depend on the quantiles examined, and in particular for the purposes of this thesis that the self-employment "own account" or employer premium/penalties compared to paid workers are of chief importance. This means the second econometric assessment is made up of two parts:

(a) Heckman corrected OLS estimations on conditional labour wage to see the extent of the earnings gap – if any – between paid-workers, self-employed "own account" workers and employers: Eqn [5.6][44].

(b) Quantile regressions to show the labour wage penalty or premiums conditional on individual characteristics reflecting the earnings gap – if any – between paid-workers, self-employed "own account" workers and employers: Eqn [5.7].

[44] The results of the first stage of the Heckman (1979) procedure, estimation [5.4] i.e. selection into employment (employer, paid work or self-employed "own account" labour status) are presented in the appendix section.

4.5.3: Potential Econometric Issues (2nd Empirical Assessment)

The most apparent potential issue is one of endogeneity. In the light of the earlier estimation, the decision to hold an occupational status could depend on observed educational attainment, especially with a high educational attainment having a negative impact on the probability of self-employment. This relationship could give rise to endogeneity, which would lead to biased estimates from the equation, since two independent variables (in this case educational attainment and labour wages) influence the dependent variable and could be correlated with the error term.

The regular practice in this case would be to look for suitable instrumental variables, which are variables that are correlated with the "problem variable", in this case *educational attainment*, but uncorrelated with the error term in order to replace the variable in question[45]. In the absence of suitable instrumental variables in the data for either of the years surveyed, the estimation was performed twice. The first estimation includes the "problem variable" (educational attainments), while the second estimation does not include educational attainments and serves as a robustness test.

This was done because the econometrics literature acknowledges that finding such instrumental variables might be difficult; hence an acceptable practice is to exclude the variable with perceived endogeneity altogether and compare the results from this estimation with results from an estimation where the "problem variable" is included (Bargain and Kwenda, 2011, Van der Sluis et al., 2005, Bhaumik et al., 2013). Other tests for multicollinearity and robustness proved satisfactory. Other forms of robustness checks were conducted on different samples by gender and regions and also by dropping educational variables.

[45] Using either the 2SLS or GMM technique.

4.6: RESULTS OF ASSESSMENTS 2 - LABOUR WAGE

In the second assessment, the thesis aims to understand if holding an occupational status can influence labour wage. If it does and there is a discernible relationship between labour wage and occupational status after we have allowed for other observable factors, then individuals can report differing wages/incomes even if they possess the same characteristics and skills as other individuals, given that those other individuals belong in a different occupational class**.** As the key issue in this assessment is therefore the labour wage generated from the various employment categories, only employers, paid workers and self-employed "own account" workers are needed.

As highlighted in section 3.12, there were 4,277 individuals in 2004 with missing education values but none in 2009. The 4,277 individuals with missing education values were included in the education regression estimations with their educational status denoted as "Unspecified" to add clarity to the results. However, these individuals were not included in the income estimations because the Mincer regression estimation requires educational values to properly link the labour returns to available characteristics. Thus the income estimations involved a restricted data sample of the total respondents without the individuals who did not provide education values. This left a sample size of 14,120 individuals remaining from the 2004 survey.

Furthermore, individuals not active in the labour force (i.e. the unemployed and individuals not in the labour force) were removed from the sample for the income estimations as they did not (and indeed should not) report any incomes. Thus the income estimations (in Section 4.5) made use of the 10,832 individuals that were residual in employment after using the Heckman (1979) procedure to select these individuals from the entire 14,120 sample. In addition, due to inconsistencies in the way that the income variable was reported in the 2009 survey, this thesis could only use the annual labour wages/personal incomes variable from the 2004 survey. Table 19a reports the means and standard errors of the real value of annual labour wages for individuals in the 2004 survey.

Table 19a: Mean Annual Labour Wage by Employment Type, Gender and Region – 2004 Survey

		Male		Female	
		Mean Wage ₦[46] (Std Err)	N	Mean Wage ₦ (Std Err)	N
North					
	Self-Employed[47]	185,965.8 (9,644.5)	751	*219,091 ** (24,881.5)	140
	Paid Worker	281,630.5 (13,692.16)	621	191,768.2 (10,059.76)	137
	Employer	311,048.9 (28,595.95)	165	*412,033.3 ** (78,699.14)	24
Midbelt					
	Self-Employed	206,539 (10,299.61)	703	140,146.8 (12,662.84)	313
	Paid Worker	238,019.9 (10,548.42)	507	195,603.8 (9,299.89)	153
	Employer	266,039.3 (24,226.71)	125	*293,468.8 ** (52,992.66)	32
South-East					
	Self-Employed	208,569.5 (5,471.77)	1,650	133,462.6 (5,250.546)	1,010
	Paid Worker	260,804.9 (12,123.49)	712	222,930.6 (10,861.79)	389
	Employer	343,745.2 (29,518.05)	86	171,220 (12,743.83)	47
South-West					
	Self-Employed	184,967.1 (6,752.93)	1093	129,438.1 (6,706.68)	898
	Paid Worker	225,743.8 (7,332.42)	784	205,809.8 (10,436.51)	366
	Employer	213,274.6 (16,228.51)	77	*358,962.9 ** (57,584.58)	49
Entire Sample					
	Self-Employed	198,038.1 (3,700.58)	4,197	137,895.5 (4,086.32)	2,361
	Paid Worker	250,855.5 (5,515.434)	2,624	208,847.8 (5,776.33)	1,045
	Employer	288,216.8 (13,973.58)	453	*295,502.1 ** (26,074.22)	152
	Entire Gender	222,707.3 (3,065.33)	7,274	*165,467.6 (3,458.49)*	3,558
	N	**10,832**	**7,274**		**3,558**

[46] Conversion rate was about 133 ₦ ≈ $1 during the period under review.
[47] "Own Account" workers represent the Self-Employed sample throughout this analysis.

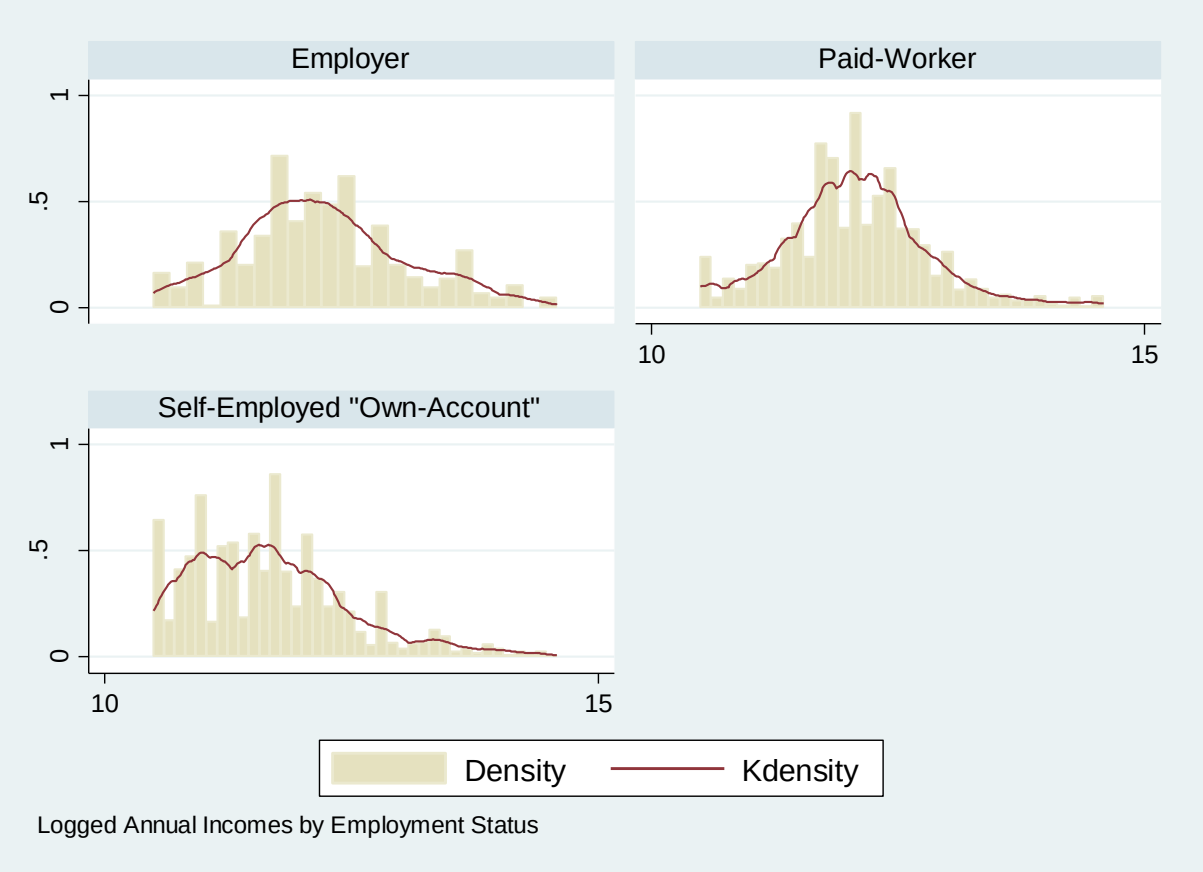
Table 19a reports the means and standard errors of the real value of annual labour wages for individuals in the 2004 survey, and shows that on average, employers have the highest annual labour wages, followed by paid-employees and then by self-employed "own account" workers. This is in line with the literature that makes these distinctions among employment categories, notably Tamvada (2010) and Earle and Sakova (2000).

Also from the mean annual labour wages reported in Table 19, males appear to always earn more than females except in the cases highlighted by *italics* and asterisk*; and the common occurrence is mostly for employer females/women in the survey seem to earn more than males/men. These wage and employment figures are also in agreement with the macro indicators given by the World Bank and NBS, in terms of regional and gender differences in employment statistics within the country.

This thesis makes use of "annual labour wages of individuals" in the logged form. The annual labour wages of individuals in employment in 2004 were converted to the logged form for this thesis because this is the preferred data transformation method applied in the economics/econometrics field when a value of interest ranges over several orders of magnitude. In this case, the annual labour wages were logged so as to introduce symmetry in the data. The logarithm(log) is often favoured because it is easy to interpret its result in terms of 'fold change'; i.e. a unit increase in the independent variable should be associated with an average of 100% coefficient increase of the dependent variable.

Figure 19 shows the histogram and kdensity plots of the logged annual labour wage distribution for each employment category given in the 2004 NBS LSS survey.

Figure 19: Histogram and Kdensity for Logged Annual Labour Wages/Incomes by Employment Category



It is easy to observe from Figure 19 that the self-employed "own account" distribution is more rugged/uneven compared to other employment categories: this could imply that individuals in this category are more unequal in terms of wages i.e the income disparities in this group could be very substantial. The kdensity plots for paid workers and employers also appears to be close to the normal fit, while the kdensity plot for self-employed "own account" workers appears to be negatively skewed. The employers' kdensity distribution however seems to have more individuals at the right hand side of the distribution. Once again this confirms Table 19 in showing that employers appear to be the highest earners in the distribution, followed by paid workers and then by self-employed "own account" individuals.

4.6.1: RESULTS 2: LABOUR WAGE – HECKMAN (MINCER) ESTIMATION AND QUANTILE REGRESSIONS

As pointed out in the methodology section 4.5.1, the Heckman model deals with a continuous outcome that is observed only when another equation determines that the observation is selected and the errors of the two equations are allowed to be correlated. In this case, individuals can earn a labour wage only if they are first in employment, and thus labour wage for an occupational status might be correlated with the decision to participate in and be employed in the labour market initially We thus have:

$$E[Y_i|x_i, W = 1] = x_i\beta + \delta Se_i + \eta Em_i + \rho\sigma_\mu\lambda(W'\beta) \qquad [5.6]$$

Where ρ is the correlation between unobserved determinants of propensity to work W and unobserved determinants of wage offers μ_i (i.e the conditional expectation of wages given the individuals works), σ_u is the standard deviation of μ_i, and λ is the inverse Mills ratio evaluated at $X'\beta$. This equation thus solves the sample selection that can be viewed as a form of omitted-variables bias, conditional on first being employed and not belonging to the "unemployed" or "not in labour force" categories.

In our results, Y_i will denote logged annual labour wage of workers, Explanatory variables x_i comprise standard human capital formation literature variables (age, age squared, sector, sex, marital status, educational attainment – the same as in the first assessment, credit constraints, ability to speak a Nigerian language, region as well, as dummies for religion). The dummies Se_i and Em_i take the value of one (1) if person i is a self-employed worker or employer respectively. The estimated coefficients $\hat{\delta}$ and $\hat{\eta}$ are thus interpreted as a measure of the Heckman corrected conditional earnings premium/penalty experienced by the self-employed and employers respectively, compared to formal wage earners.

In addition, to enable us view the income distribution across different percentage points, "Quantile Regressions" were used. The quantile regression for any worker i at the τ^{th} quantile of the Y distribution conditional on observables is written as:

$$F_{yi}^{-1}(\tau|x_i) = x_i\beta(\tau) + \delta(\tau)Se_i + \eta(\tau)Em_i + \mu_i, \quad \forall\tau \in [0,1]. \qquad [5.7]$$

And the percentage points that are observed in this estimation are:

$$.01, .05, .10, .20, .30, .40, .50, .60., .70, .80, .90, .95 \; and \; .99.$$

The insight from analysing this is to determine if individuals in any of the employment states are bound to enjoy or suffer labour wage premiums or penalties respectively, relative to another employment option at any particular point on the annual labour wage distribution. The results of the first stage of the Heckman (1979) procedure, estimation [5.4] i.e. selection into employment (employer, paid work or self-employed "own account" labour status) are presented in the appendix section. The results of the Heckman corrected conditional earnings premium/penalty estimation [5.6] and the quantile regression estimation [5.7] on the 2004 survey are presented next.

Variables	Heckman Estimation	Table 19b: Labour Wage Premiums and Penalties - Estimations [5.6] & [5.7]												
		Q(.01)	Q(.05)	Q(.10)	Q(.20)	Q(.30)	Q(.40)	Q(.50)	Q(.60)	Q(.70)	Q(.80)	Q(.90)	Q(.95)	Q(.99)
Age in years	0.033***	0.000	0.035***	0.037***	0.041***	0.041***	0.041***	0.031***	0.026***	0.033***	0.022**	-0.028**	0.001	-0.038
	(0.010)	(0.000)	(0.006)	(0.008)	(0.004)	(0.004)	(0.004)	(0.006)	(0.005)	(0.007)	(0.009)	(0.014)	(0.018)	(0.031)
Agesquared	-0.000***	0.000	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000*	0.000**	0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urban	0.123***	-0.000	0.113***	0.100***	0.129***	0.151***	0.098***	0.141***	0.143***	0.109***	0.101***	0.148***	0.033	0.091
	(0.017)	(0.000)	(0.018)	(0.027)	(0.012)	(0.016)	(0.017)	(0.025)	(0.023)	(0.026)	(0.024)	(0.040)	(0.070)	(0.112)
Unspecified	0.014	0.000	0.041	-0.002	-0.102**	-0.054	-0.111**	-0.096**	-0.117**	-0.004	-0.034	0.284***	0.791***	0.353
	(0.041)	(0.000)	(0.047)	(0.063)	(0.052)	(0.057)	(0.055)	(0.045)	(0.053)	(0.067)	(0.074)	(0.100)	(0.100)	(0.332)
Low ed	0.207***	0.000	0.157***	0.214***	0.212***	0.247***	0.176***	0.146***	0.109*	0.194***	0.084	0.325***	0.754***	-0.041
	(0.039)	(0.000)	(0.046)	(0.063)	(0.042)	(0.048)	(0.049)	(0.046)	(0.056)	(0.060)	(0.064)	(0.053)	(0.101)	(0.426)
Mid ed	0.344***	0.000	0.256***	0.324***	0.355***	0.392***	0.300***	0.316***	0.310***	0.356***	0.242***	0.453***	0.744***	0.003
	(0.040)	(0.000)	(0.041)	(0.063)	(0.040)	(0.050)	(0.054)	(0.051)	(0.054)	(0.059)	(0.060)	(0.072)	(0.086)	(0.432)
High ed	0.783***	0.405***	0.806***	0.945***	0.899***	0.922***	0.834***	0.780***	0.696***	0.728***	0.633***	0.793***	0.988***	-0.226
	(0.046)	(0.083)	(0.085)	(0.077)	(0.046)	(0.038)	(0.051)	(0.043)	(0.052)	(0.064)	(0.063)	(0.089)	(0.101)	(0.420)
Very highed	0.999***	0.000	0.286	1.105***	1.116***	1.213***	1.082***	0.980***	1.036***	1.215***	1.115***	1.370***	1.311***	0.178
	(0.062)	(0.000)	(0.233)	(0.378)	(0.060)	(0.067)	(0.056)	(0.062)	(0.106)	(0.078)	(0.059)	(0.108)	(0.084)	(0.455)
Male	0.251***	-0.000	0.131***	0.150***	0.200***	0.233***	0.255***	0.238***	0.250***	0.240***	0.226***	0.272***	0.275***	0.405***
	(0.023)	(0.000)	(0.023)	(0.024)	(0.023)	(0.021)	(0.021)	(0.019)	(0.016)	(0.017)	(0.021)	(0.047)	(0.038)	(0.065)
Married	-0.002	0.000	0.013	-0.008	0.007	-0.020	-0.017	0.013	-0.018	0.016	0.049**	0.053	-0.028	-0.184*
	(0.017)	(0.000)	(0.023)	(0.025)	(0.021)	(0.017)	(0.017)	(0.018)	(0.013)	(0.021)	(0.022)	(0.039)	(0.048)	(0.110)
Christian	0.053	0.000	0.010	-0.028	0.031	-0.019	0.017	0.049	-0.018	0.031	0.056	0.297**	0.277	-0.393
	(0.069)	(0.018)	(0.076)	(0.090)	(0.091)	(0.064)	(0.055)	(0.108)	(0.113)	(0.115)	(0.047)	(0.126)	(0.466)	(0.496)
Muslim	0.032	0.000	0.063	-0.004	0.029	-0.018	-0.001	-0.001	-0.049	-0.009	0.005	0.267*	0.228	-0.515
	(0.070)	(0.018)	(0.074)	(0.096)	(0.095)	(0.068)	(0.053)	(0.111)	(0.109)	(0.106)	(0.044)	(0.138)	(0.480)	(0.498)
Houseland	-0.087***	-0.000	-0.015	-0.059***	-0.099***	-0.117***	-0.102***	-0.069***	-0.068**	-0.059	-0.050	-0.019	0.000	-0.000
	(0.027)	(0.000)	(0.020)	(0.016)	(0.028)	(0.031)	(0.036)	(0.026)	(0.033)	(0.041)	(0.041)	(0.064)	(0.069)	(0.102)
Locallang	-0.033	-0.000	-0.006	-0.036	-0.102***	-0.098***	-0.046**	-0.034	0.003	0.029	0.028	-0.024	-0.045	0.087
	(0.021)	(0.000)	(0.033)	(0.025)	(0.025)	(0.023)	(0.020)	(0.024)	(0.026)	(0.028)	(0.026)	(0.049)	(0.041)	(0.119)
South-East	0.092***	-0.000	0.139***	0.104***	0.140***	0.117***	0.070***	0.081***	0.097***	0.054*	0.047	0.137**	0.093	0.109
	(0.023)	(0.000)	(0.031)	(0.035)	(0.030)	(0.025)	(0.024)	(0.018)	(0.022)	(0.033)	(0.033)	(0.062)	(0.121)	(0.128)
South-West	-0.099***	-0.000	-0.058**	-0.095***	-0.013	-0.047**	-0.083***	-0.110***	-0.082**	-0.130***	-0.131***	-0.196***	-0.210*	-0.180*
	(0.024)	(0.000)	(0.028)	(0.031)	(0.027)	(0.023)	(0.027)	(0.032)	(0.033)	(0.028)	(0.046)	(0.057)	(0.114)	(0.096)
North	0.039	0.000	0.009	-0.025	0.075**	0.021	-0.025	-0.024	0.017	-0.023	-0.034	0.150	0.519***	0.156
	(0.026)	(0.000)	(0.025)	(0.032)	(0.031)	(0.025)	(0.023)	(0.020)	(0.036)	(0.031)	(0.041)	(0.094)	(0.094)	(0.126)
Employer	0.126***	0.000	0.007	0.065	0.089**	0.100***	0.048	0.109**	0.135***	0.070**	0.067	0.286***	0.316**	0.057
	(0.033)	(0.032)	(0.093)	(0.082)	(0.036)	(0.031)	(0.032)	(0.055)	(0.033)	(0.028)	(0.043)	(0.071)	(0.146)	(0.148)
S.Employed	-0.160***	0.000**	-0.156***	-0.273***	-0.298***	-0.242***	-0.244***	-0.206***	-0.163***	-0.095***	-0.061***	0.076	0.076	0.182
	(0.017)	(0.000)	(0.037)	(0.029)	(0.025)	(0.021)	(0.021)	(0.023)	(0.018)	(0.019)	(0.019)	(0.051)	(0.053)	(0.108)
Cons	10.602***	10.491***	9.696***	9.971***	10.028***	10.202***	10.444***	10.679***	10.956***	10.833***	11.348***	12.246***	11.756***	14.949***
	(0.254)	(0.018)	(0.145)	(0.148)	(0.147)	(0.121)	(0.110)	(0.147)	(0.136)	(0.126)	(0.186)	(0.358)	(0.564)	(0.999)
Lambda/R^2	0.046	0.0159	0.0796	0.1080	0.1491	0.1545	0.1442	0.1348	0.1232	0.1071	0.0879	0.0627	0.0537	0.0348
		* p<0.1; ** p<0.05; *** p<0.01												

The results of estimations [5.6] and [5.7] on the entire 2004 earning population show the following:

1. The Heckman corrected conditional earnings premium/penalty estimates indicate that on average, self-employed own account individuals earn about 16% less than their counterparts in paid work, while employers earn about 12.6% more.
2. From the conditional quantile estimates (and at the median), self-employed own account workers still consistently earn less than paid employees, but then catch up around the 90^{th} and 95^{th} quantiles. At the topmost quantile, the differences in earnings are not significant between groups.
3. At the conditional quantile estimates and at the median, employers are the highest earning in the sample. Though these premiums are insignificant at lower quantiles; the positive significant effect begins from the 20^{th} quantile.
4. All other variable coefficients are as expected from the literature (note that males seem to earn more and earnings also significantly increase with more educational attainments).

These results can be better highlighted in the graph (Figure 20) below:

Figure 20: Heckman and Quantile Labour Wage Premiums and Penalties - Estimations [5.6] and [5.7]

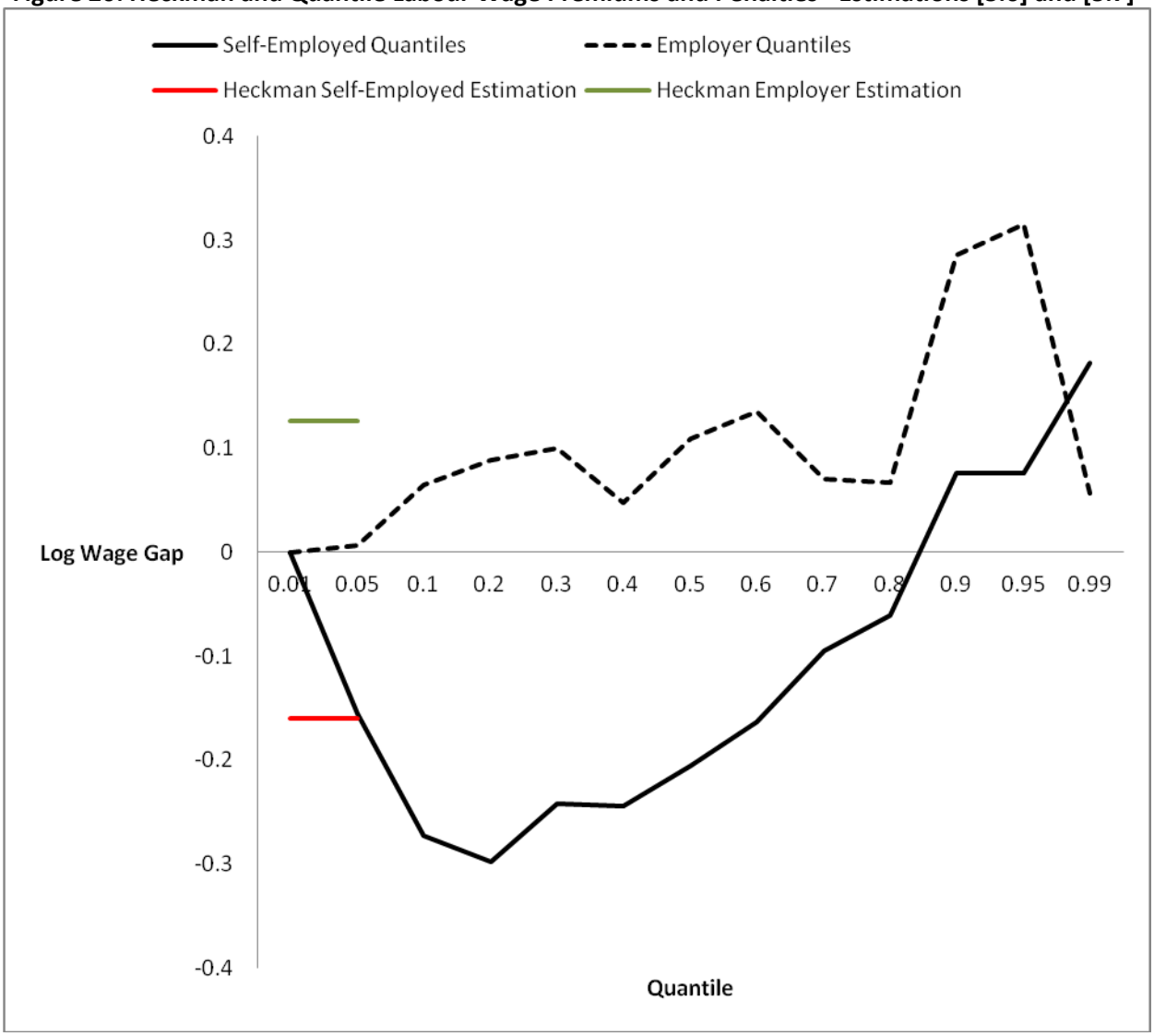


Figure 20 plots a graph of the log labour wage gap conditional on observable characteristics. The horizontal y-axis represents the earnings/incomes of paid workers, while the dotted and thick black lines show the conditional income premiums/penalties of employers and self-employed "own account" individuals respectively.

The results from Figure 20 indicate that several recent authors have been right in requesting researchers to recognize that self-employment might be a heterogeneous employment option, with some individuals advantaged and others disadvantaged (Fields, 2004, Günther and Launov, 2012).

Although this thesis could not make a distinction between the formal and informal sectors, it could distinguish employers from self-employed "own account" workers, and the results and contrasts between the two are both striking and interesting.

Employers in general seem to experience earnings premiums and continue to do better than paid workers and self-employed "own account" workers until the upper quantiles; and hence can be described as being mostly in *pulled* self-employment, since they are in a preferable employment option as regards labour wage. Self-employed "own account" workers on the other hand are worse off in terms of labour wage until the 80^{th} quantile when they begin to experience premiums. Those below this belt can be described as being in *pushed* self-employment while those above can be described as *pulled* according to the literature.

However, as the researcher has previously highlighted in Section 3.11, there are significant regional differences in Nigeria and thus a need to examine different sections of the data in the form of robustness checks. Consequently the estimation is run for all regions to ensure that the results are robust for different data samples. These results for Estimations [5.6] and [5.7] for each region are shown below in Table 20 and the graphs expressing the results come afterwards in Figures 21, 22, 23 and 24[48]:

[48] The results of the first stage of the Heckman (1979) procedure, estimation [5.4] i.e. selection into employment (employer, paid work or self-employed "own account" labour status) are presented in the appendix section.

Table 20: Labour Wage Premiums and Penalties for Each Region - Estimations [5.6] & [5.7] for Each Region

REGION	Heckman Estimation	Quantile Estimation												
		Q(.01)	Q(.05)	Q(.10)	Q(.20)	Q(.30)	Q(.40)	Q(.50)	Q(.60)	Q(.70)	Q(.80)	Q(.90)	Q(.95)	Q(.99)
North														
Employer	0.123*	-0.052	-0.084	0.043	0.061	0.064	0.184***	0.175**	0.207***	0.079	0.040	0.247	0.059	0.215
	(0.067)	(0.163)	(0.189)	(0.153)	(0.060)	(0.054)	(0.048)	(0.069)	(0.050)	(0.072)	(0.100)	(0.324)	(0.441)	(0.214)
Self-Employ	-0.166***	0.043	-0.245***	-0.348***	-0.318***	-0.314***	-0.144***	-0.112*	-0.046	-0.177**	-0.003	0.108	-0.101	0.217
	(0.048)	(0.040)	(0.080)	(0.081)	(0.074)	(0.071)	(0.055)	(0.067)	(0.065)	(0.080)	(0.104)	(0.193)	(0.251)	(0.179)
N	4,137													
Sigma/R^2	0.8223	0.0743	0.1463	0.1799	0.2242	0.2175	0.1923	0.1681	0.1382	0.1215	0.0959	0.0692	0.0527	0.0820
Mid-Belt														
Employer	0.001	0.116	-0.446***	-0.101	-0.107	-0.123	-0.181***	-0.129	-0.014	-0.082	-0.062	-0.051	0.482**	0.392
	(0.069)	(0.157)	(0.145)	(0.150)	(0.078)	(0.081)	(0.069)	(0.091)	(0.102)	(0.084)	(0.076)	(0.146)	(0.242)	(0.299)
Self-Employ	-0.158***	-0.044	-0.468***	-0.490***	-0.494***	-0.411***	-0.282***	-0.242***	-0.088	0.013	0.014	0.141	0.354**	0.291
	(0.044)	(0.057)	(0.075)	(0.069)	(0.068)	(0.056)	(0.049)	(0.057)	(0.068)	(0.063)	(0.049)	(0.096)	(0.144)	(0.209)
N	3,409													
Sigma/R^2	0.7499	0.0550	0.1370	0.1583	0.1624	0.1540	0.1497	0.1426	0.1242	0.1106	0.1045	0.1081	0.1251	0.1285
South-East														
Employer	0.197***	-0.000	0.029	0.214	0.161	0.315***	0.233***	0.229**	0.274**	0.286***	0.414***	0.116	-0.012	-0.470*
	(0.066)	(0.066)	(0.151)	(0.136)	(0.143)	(0.088)	(0.089)	(0.094)	(0.121)	(0.086)	(0.115)	(0.148)	(0.169)	(0.282)
Self-Employ	-0.116***	-0.000	-0.091***	-0.105***	-0.156***	-0.100***	-0.144***	-0.162***	-0.148***	-0.121***	-0.029	-0.141*	-0.152	-0.366**
	(0.028)	(0.013)	(0.035)	(0.038)	(0.034)	(0.024)	(0.034)	(0.036)	(0.043)	(0.041)	(0.045)	(0.082)	(0.107)	(0.164)
N	6,286													
Sigma/R^2	0.7546	0.0170	0.0837	0.1010	0.1317	0.1418	0.1258	0.1221	0.1125	0.1002	0.0827	0.0873	0.0754	0.1031
South-West														
Employer	0.183***	0.000	0.022	0.110	0.000	0.065	0.073	0.024	0.056	0.244*	0.265***	0.858***	0.481***	0.208
	(0.067)	(0.116)	(0.153)	(0.129)	(0.124)	(0.074)	(0.051)	(0.054)	(0.072)	(0.144)	(0.096)	(0.299)	(0.154)	(0.262)
Self-Employ	-0.228***	0.000	-0.098**	-0.240***	-0.392***	-0.368***	-0.313***	-0.308***	-0.265***	-0.192***	-0.143***	-0.121***	-0.017	-0.220
	(0.030)	(0.010)	(0.044)	(0.049)	(0.045)	(0.036)	(0.042)	(0.041)	(0.054)	(0.058)	(0.052)	(0.041)	(0.084)	(0.143)
N	4,565													
Sigma/R^2	0.7128	0.0152	0.0956	0.1174	0.1538	0.1806	0.1727	0.1569	0.1504	0.1362	0.1252	0.1007	0.0958	0.0907

Figure 21: Heckman and Quantile Labour Wage Premiums and Penalties for Northern Region – Estimations [5.6] & [5.7]; Northern Region

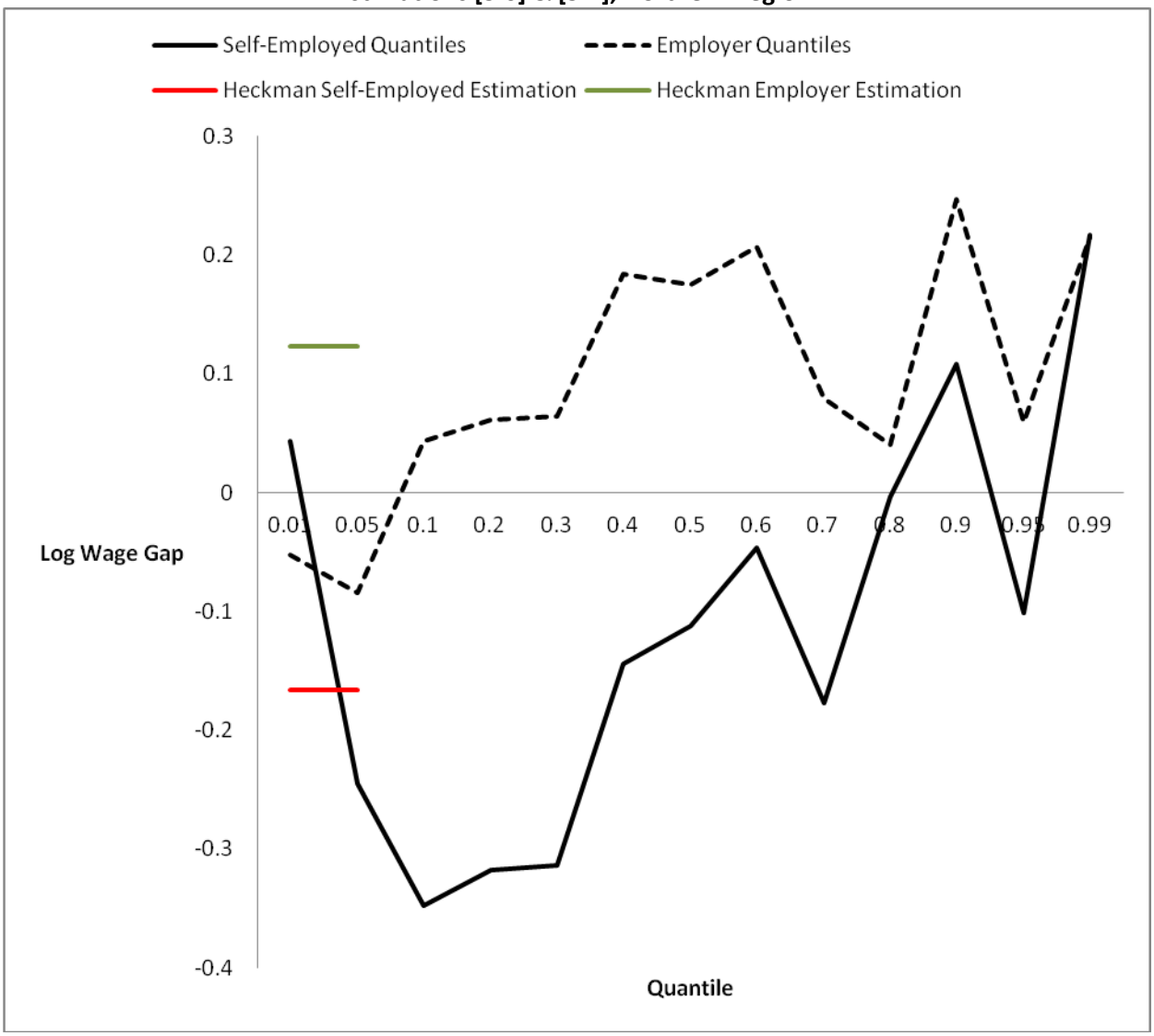


Figure 22: Heckman and Quantile Labour Wage Premiums and Penalties for Mid-belt Region – Estimations [5.6] & [5.7]; Mid-belt Region

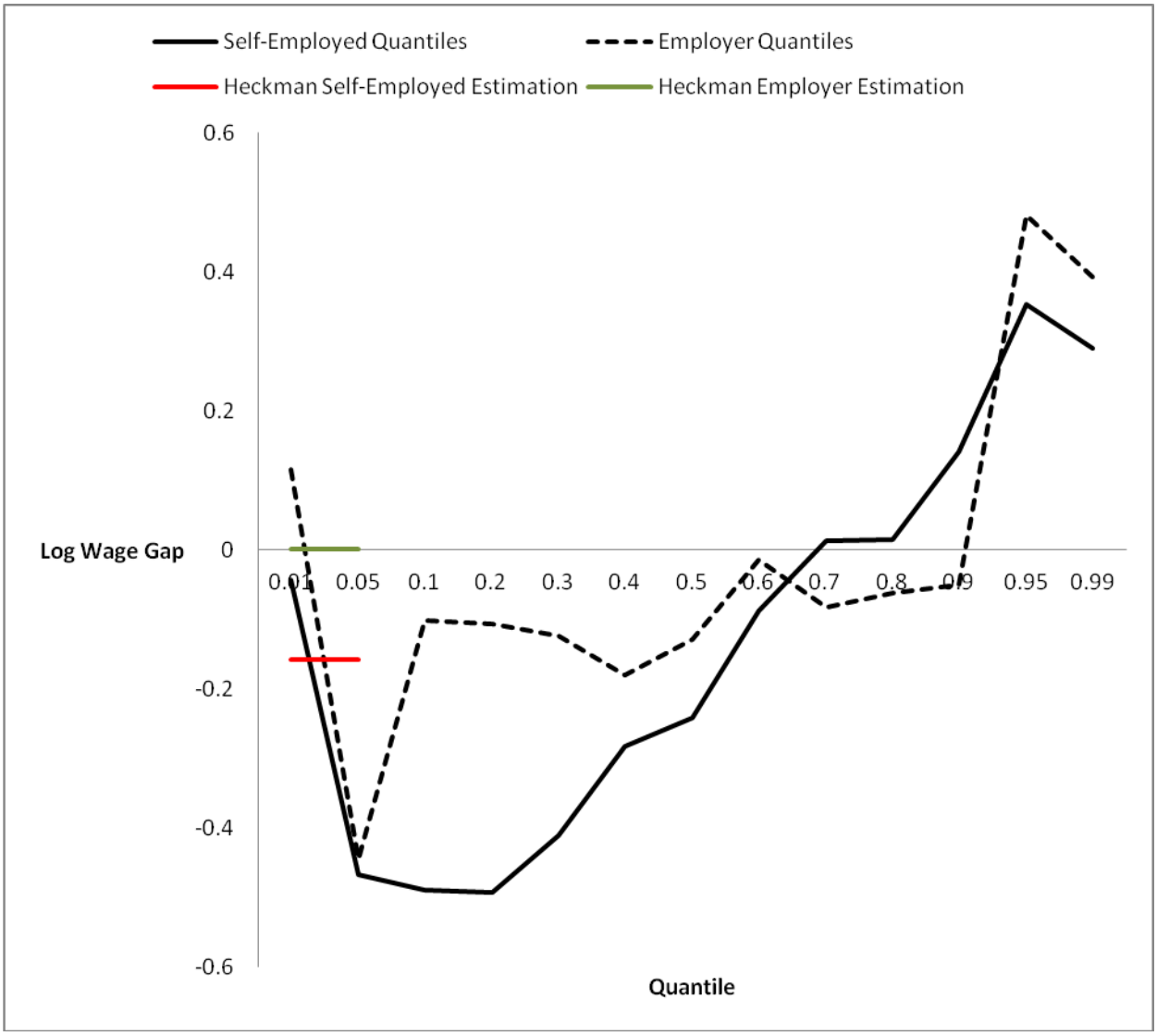


Figure 23: Heckman and Quantile Labour Wage Premiums and Penalties for South-East Region – Estimations [5.6] & [5.7]; South-East Region

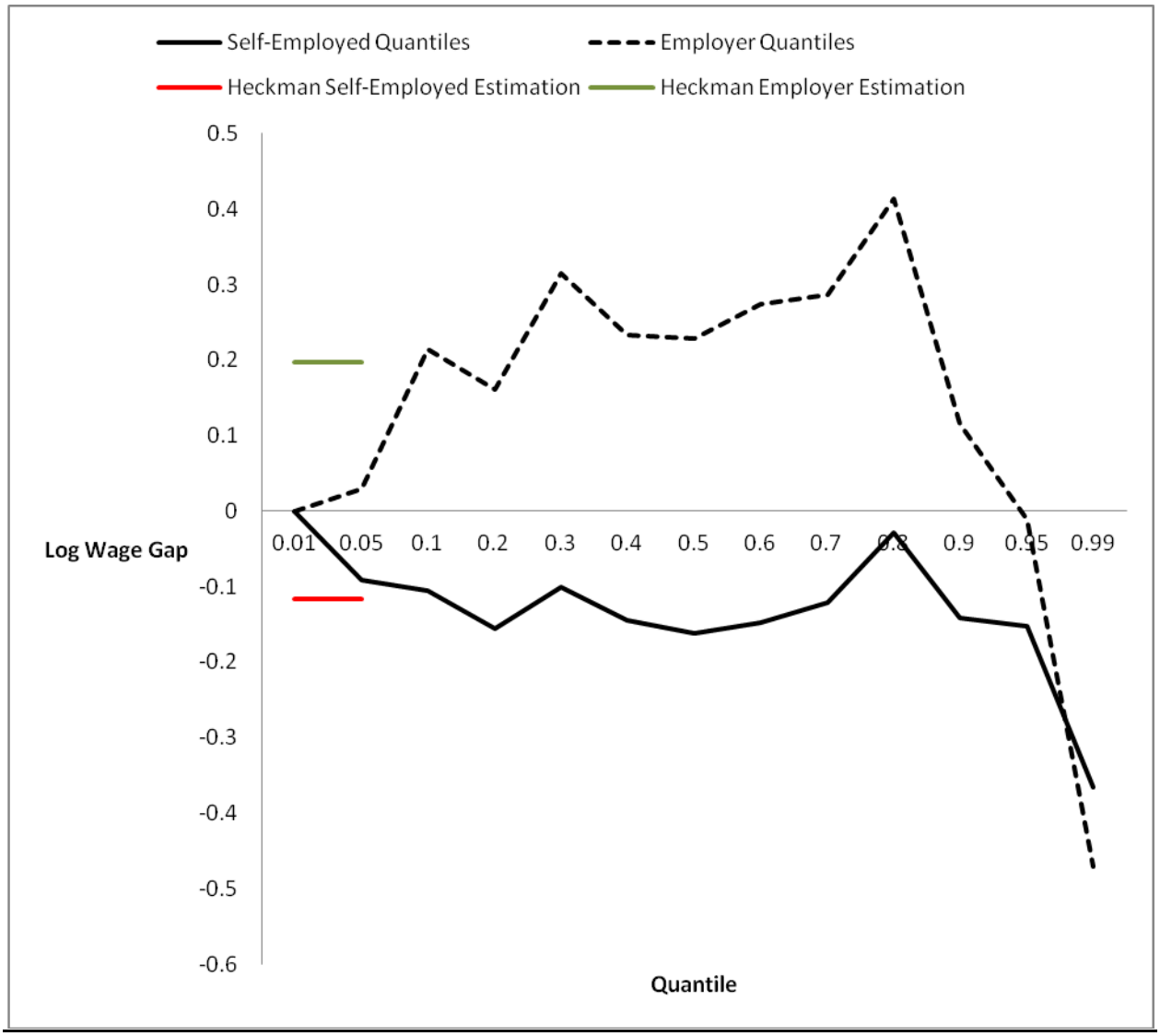


Figure 24: Heckman and Quantile Labour Wage Premiums and Penalties for South-West Region – Estimations [5.6] & [5.7]; South-West Region

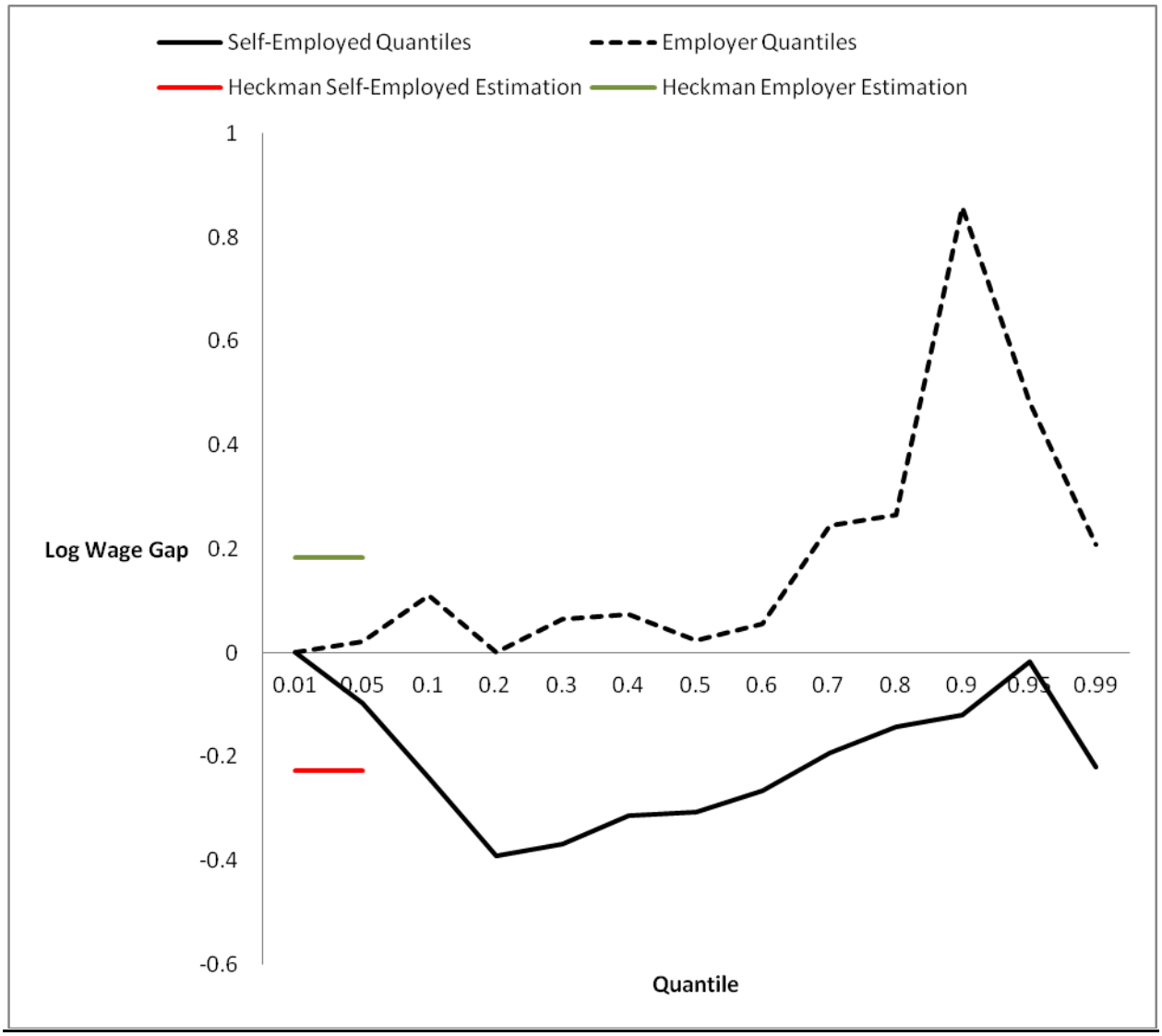


Table 20 and Figures 21, 22, 23 and 24 indicate that employers typically are better-off in terms of conditional earnings compared to other employment options in all regions of the country. Furthermore, this thesis consistently finds that self-employed "own account" workers in general are worse off in terms of labour wages regardless of the region of the country they operate in.

This penalty for the self-employed "own account" workers is especially found towards the lower ends of the distribution (at the left hand side of the graphs and tables), where paid workers should enjoy some sort of minimum wage guarantee; this amount has been reviewed several times but is currently ₦18, 000, although there are rumours that some states do not implement the minimum wage. As the self-employed "own account" workers are not guaranteed such minimum wage levels, they seem to be substantially worse off towards the lower ends of the distribution but improve later as such effects wear off. This labour wage penalty seems to occur to a certain point on the distribution (usually around the 10^{th} and 20^{th} percentiles) and then starts to improve.

Furthermore, the shape of the distribution is the same in all regions apart from that in the South-East region, where the employers and own account workers are substantially worse-off compared to paid workers. For now, this thesis can only speculate that since that region has the highest number of self-employed individuals, the competition in that sector might erode potential benefits in terms of labour wages.

Overall, this would seem to indicate that employers can mostly be classed as *pulled* into this employment option as they are advantaged in terms of labour wages compared to being in paid work. "Own account" self-employed workers consistently seem to be disadvantaged in terms of income in all regions, even though as in the Mid-belt and Northern regions, they enjoy premiums at the upper end of the distribution. So while a majority of self-employed "own account" workers can be classed as being in *pushed* self-employment - especially those in the lower end, some at the upper end, albeit a very small minority, can be classed as *pulled*.

Given the gender disparities already discussed in section 2.4.1.11, and since there is also a need to examine the personal labour wage participation experience from a gender perspective, this thesis estimates the regressions [5.6] and [5.7] separately for men and women. This is also to ensure that the results are robust for different data samples and because the thesis aims to contribute to the gender labour force literature as regards developing countries. The results are presented below in Table 21[49]:

[49] The results of the first stage of the Heckman (1979) procedure, estimation [5.4] i.e. selection into employment (employer, paid work or self-employed "own account" labour status) are presented in the appendix section.

Variables	Heckman Estimation	Table 21: Male Labour Wage Premiums and Penalties - Estimations [5.6] & [5.7] for Male Sample												
		Q(.01)	Q(.05)	Q(.10)	Q(.20)	Q(.30)	Q(.40)	Q(.50)	Q(.60)	Q(.70)	Q(.80)	Q(.90)	Q(.95)	Q(.99)
Age in years	-0.015	-0.000	0.044***	0.046***	0.040***	0.029***	0.032***	0.012*	0.020***	0.023***	0.013	-0.039***	-0.012	-0.092**
	(0.011)	(0.004)	(0.009)	(0.009)	(0.010)	(0.008)	(0.007)	(0.006)	(0.006)	(0.006)	(0.011)	(0.015)	(0.025)	(0.038)
Age(square)	0.000	0.000	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***	-0.000	-0.000**	-0.000**	-0.000	0.000***	0.000	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urban	0.199***	0.000	0.191***	0.231***	0.229***	0.179***	0.156***	0.189***	0.214***	0.198***	0.170***	0.192***	0.235***	0.153
	(0.020)	(0.022)	(0.035)	(0.035)	(0.038)	(0.030)	(0.022)	(0.026)	(0.021)	(0.031)	(0.036)	(0.037)	(0.067)	(0.104)
Unspecified	-0.111**	-0.000	-0.105*	-0.136*	-0.198***	-0.254***	-0.209***	-0.176***	-0.192*	-0.222**	-0.182***	0.222**	0.741***	-0.029
	(0.053)	(0.025)	(0.056)	(0.081)	(0.067)	(0.066)	(0.061)	(0.063)	(0.106)	(0.113)	(0.053)	(0.087)	(0.192)	(0.540)
Low ed	0.097*	-0.000	0.067	0.110	0.177***	0.086	0.061	0.063	0.029	0.019	-0.011	0.243**	0.628***	-0.150
	(0.050)	(0.017)	(0.068)	(0.076)	(0.050)	(0.075)	(0.063)	(0.060)	(0.101)	(0.110)	(0.045)	(0.094)	(0.175)	(0.511)
Mid ed	0.231***	-0.000	0.137	0.222***	0.322***	0.229***	0.185***	0.212***	0.174*	0.199*	0.149***	0.338***	0.583***	-0.095
	(0.050)	(0.023)	(0.087)	(0.072)	(0.057)	(0.071)	(0.060)	(0.058)	(0.099)	(0.104)	(0.036)	(0.056)	(0.166)	(0.473)
High ed	0.717***	0.405***	0.934***	0.859***	0.864***	0.740***	0.701***	0.659***	0.580***	0.577***	0.607***	0.698***	0.816***	-0.398
	(0.057)	(0.155)	(0.120)	(0.066)	(0.055)	(0.084)	(0.062)	(0.059)	(0.102)	(0.119)	(0.069)	(0.077)	(0.151)	(0.520)
Very highed	0.850***	-0.000	0.151	0.074	0.997***	0.903***	0.887***	0.911***	0.831***	0.989***	0.862***	1.412***	1.438***	0.090
	(0.075)	(0.031)	(0.183)	(0.525)	(0.120)	(0.095)	(0.124)	(0.085)	(0.113)	(0.137)	(0.082)	(0.153)	(0.181)	(0.479)
Married	-0.005	0.000	-0.004	0.007	0.055**	0.028	0.018	0.039	0.038	0.045	0.087***	0.101*	-0.014	0.087
	(0.025)	(0.011)	(0.045)	(0.026)	(0.025)	(0.032)	(0.019)	(0.024)	(0.028)	(0.033)	(0.034)	(0.057)	(0.071)	(0.161)
Christian	0.014	0.000	-0.161***	-0.050	0.033	0.045	0.078	0.060	0.055	0.047	0.026	0.314	-0.040	-0.369
	(0.088)	(0.121)	(0.052)	(0.086)	(0.114)	(0.119)	(0.108)	(0.104)	(0.099)	(0.158)	(0.094)	(0.282)	(0.576)	(0.272)
Muslim	0.014	0.000	-0.093	0.008	0.063	0.085	0.097	0.057	0.018	-0.005	-0.025	0.256	-0.182	-0.623**
	(0.090)	(0.122)	(0.062)	(0.117)	(0.126)	(0.128)	(0.112)	(0.106)	(0.103)	(0.162)	(0.098)	(0.255)	(0.560)	(0.245)
Houseland	-0.050	0.000	-0.033	-0.036	-0.095***	-0.102***	-0.071*	-0.051*	-0.048	-0.030	-0.039	-0.000	0.069	0.025
	(0.033)	(0.006)	(0.028)	(0.030)	(0.025)	(0.039)	(0.039)	(0.030)	(0.030)	(0.029)	(0.060)	(0.080)	(0.113)	(0.136)
Locallang	0.002	-0.000	-0.038	-0.030	-0.079**	-0.068***	0.024	0.048*	0.053	-0.007	0.019	0.017	-0.029	-0.029
	(0.026)	(0.011)	(0.058)	(0.031)	(0.031)	(0.025)	(0.020)	(0.025)	(0.033)	(0.034)	(0.038)	(0.059)	(0.061)	(0.227)
South-East	0.139***	-0.000	0.156***	0.157***	0.208***	0.185***	0.158***	0.179***	0.116***	0.063**	0.085	0.136**	-0.024	0.116
	(0.028)	(0.007)	(0.036)	(0.036)	(0.039)	(0.041)	(0.029)	(0.031)	(0.038)	(0.027)	(0.056)	(0.064)	(0.105)	(0.127)
South-West	-0.137***	-0.000	-0.067	-0.095**	-0.077***	-0.041	-0.094***	-0.114***	-0.128***	-0.109***	-0.105*	-0.197***	-0.466***	-0.087
	(0.028)	(0.010)	(0.057)	(0.042)	(0.029)	(0.038)	(0.024)	(0.039)	(0.037)	(0.029)	(0.055)	(0.048)	(0.134)	(0.099)
North	0.001	-0.000	-0.004	-0.052	0.028	-0.001	-0.068*	-0.037	-0.059	-0.025	-0.037	0.136*	0.311***	0.389**
	(0.030)	(0.006)	(0.042)	(0.047)	(0.043)	(0.041)	(0.038)	(0.034)	(0.040)	(0.041)	(0.049)	(0.071)	(0.089)	(0.191)
Employer	0.115***	0.000	0.056	0.144*	0.140***	0.099***	0.052	0.130*	0.191***	0.131***	0.075	0.155**	0.148	0.199
	(0.038)	(0.025)	(0.051)	(0.086)	(0.033)	(0.027)	(0.035)	(0.072)	(0.036)	(0.036)	(0.058)	(0.064)	(0.147)	(0.192)
S.Employed	-0.086***	-0.000	-0.101**	-0.198***	-0.183***	-0.164***	-0.154***	-0.121***	-0.075***	0.029	0.018	0.108**	0.143	0.183
	(0.021)	(0.016)	(0.045)	(0.038)	(0.038)	(0.025)	(0.024)	(0.030)	(0.027)	(0.019)	(0.031)	(0.046)	(0.091)	(0.106)
Cons	12.001***	10.491***	9.835***	9.948***	10.145***	10.642***	10.753***	11.233***	11.242***	11.349***	0.013	12.796***	12.862***	16.641***
	(0.277)	(0.140)	(0.164)	(0.264)	(0.289)	(0.224)	(0.196)	(0.150)	(0.169)	(0.261)	(0.011)	(0.369)	(0.857)	(0.859)
Sigma/R^2	0.7515	0.0179	0.0936	0.1173	0.1398	0.1295	0.1139	0.1119	0.1007	0.0931	0.0753	0.0574	0.0447	0.0397
		* p<0.1; ** p<0.05; *** p<0.01												

The results of estimations [5.6] and [5.7] on the male 2004 earning population highlight the following:

1. The Heckman corrected conditional earnings premium/penalty estimates indicate that on average, self-employed own account male individuals earn about 8.6% less than their counterparts in paid work, while male employers earn about 11.5% more.
2. At the conditional quantile estimates (and at the median), self-employed own account male workers still consistently earn less than paid male employees but seem to do better around the upper quantiles – even though these premiums are mostly insignificant.
3. At the conditional quantile estimates and at the median, male employers are the highest earning in the sample; these premiums are significant in many instances.
4. All other variable coefficients are as would be expected from the literature (note that living in the urban area/sector is associated with higher labour wages and increased education has a significant and positive relationship with earnings as well).

These results can also be highlighted in the graph (Figure 25) below:

Figure 25: Heckman and Quantile Labour Wage Premiums and Penalties for Males – Estimations [5.6] & [5.7]; Male Respondents

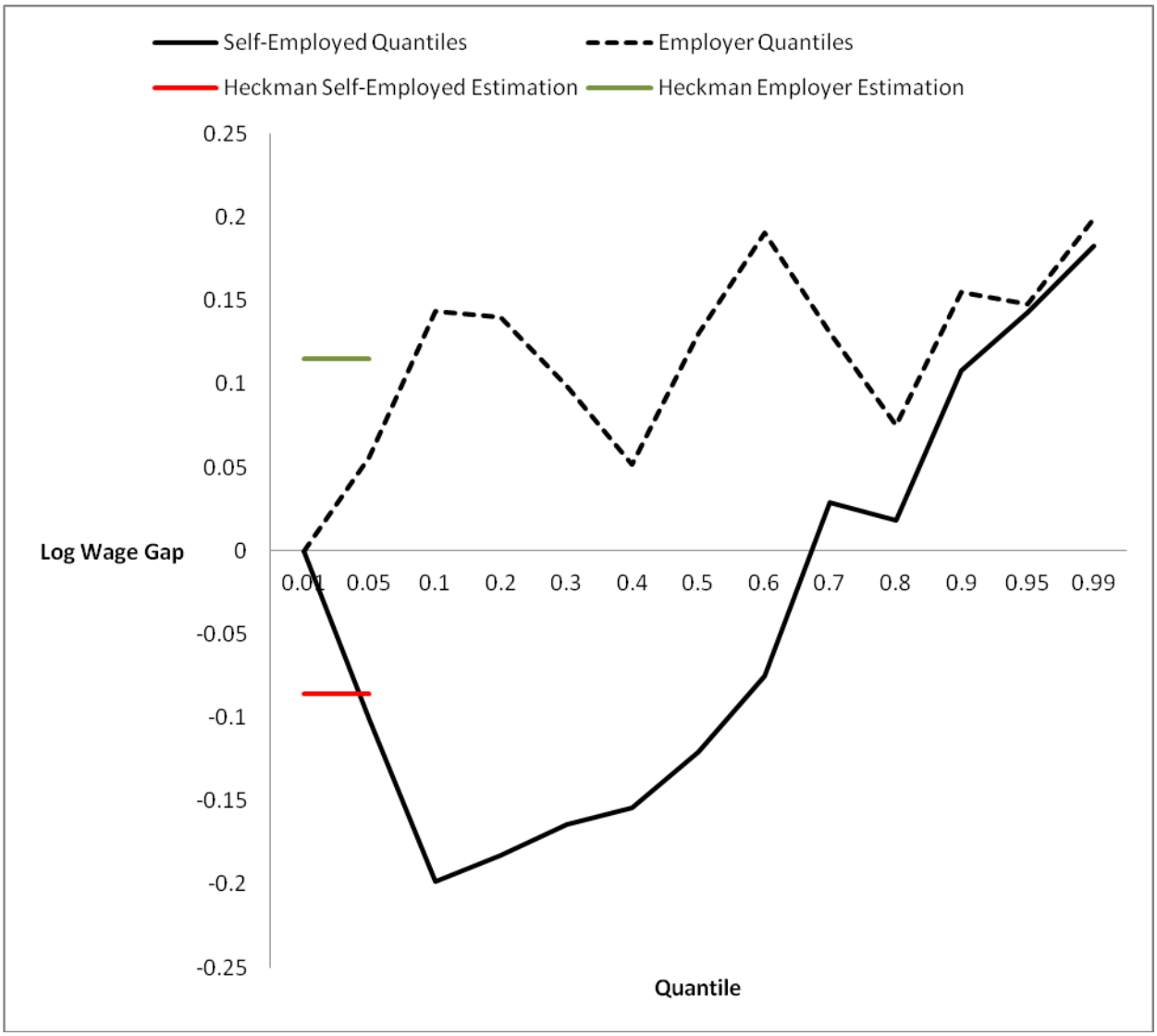


Figure 25 indicates that male employers in the general have earnings premiums and continue to do better than paid workers and self-employed "own account" workers until the upper quantiles and hence can be described as being mostly in *pulled* self-employment, since they are in a preferable employment option as regards labour wage.

Self-employed "own account" male workers on the other hand are mostly worse off in terms of labour wage until the 70th quantile, when they begin to experience premiums (though note from Table 21 that this effect is sometimes insignificant). Those experiencing penalties and premiums respectively can be classed as being in *pushed* and *pulled* self-employment according to the literature, as they are better and worse off respectively compared to paid workers as regards labour wage.

The estimations [5.6] and [5.7] are run for female respondents only in order to scrutinize the differences (if any) among the genders; the results are shown below in Table 22[50]:

[50] The results of the first stage of the Heckman (1979) procedure, estimation [5.4] i.e. selection into employment (employer, paid work or self-employed "own account" labour status) are presented in the appendix section.

Variables	Heckman Estimation	Table 22: Female Labour Wage Premiums and Penalties - Estimations [5.6] & [5.7] for Female Sample												
		Q(.01)	Q(.05)	Q(.10)	Q(.20)	Q(.30)	Q(.40)	Q(.50)	Q(.60)	Q(.70)	Q(.80)	Q(.90)	Q(.95)	Q(.99)
Age in years	0.079***	-0.000	0.013	0.024***	0.034***	0.041***	0.037***	0.038***	0.035***	0.033***	0.023*	0.001	-0.028	0.032
	(0.020)	(0.000)	(0.008)	(0.008)	(0.007)	(0.009)	(0.007)	(0.011)	(0.010)	(0.012)	(0.013)	(0.025)	(0.030)	(0.067)
Age(square)	-0.001***	0.000	-0.000	-0.000**	-0.000***	-0.000***	-0.000***	-0.000**	-0.000**	-0.000**	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Urban	-0.016	0.000*	-0.007	-0.024	-0.020	0.021	0.053**	0.009	-0.049	-0.022	-0.028	-0.135	-0.192**	-0.147
	(0.032)	(0.000)	(0.031)	(0.027)	(0.029)	(0.025)	(0.026)	(0.033)	(0.040)	(0.054)	(0.043)	(0.086)	(0.075)	(0.229)
Unspecified	0.143**	-0.000	0.067**	0.090	0.100	0.058	0.048	0.020	0.051	0.208**	0.369***	0.515***	0.765***	1.098
	(0.066)	(0.000)	(0.029)	(0.059)	(0.067)	(0.074)	(0.086)	(0.090)	(0.092)	(0.096)	(0.107)	(0.120)	(0.222)	(0.713)
Low ed	0.369***	-0.000	0.218***	0.303***	0.327***	0.309***	0.274***	0.238***	0.266***	0.309***	0.417***	0.452***	0.790***	0.827
	(0.063)	(0.000)	(0.057)	(0.074)	(0.062)	(0.077)	(0.078)	(0.084)	(0.085)	(0.082)	(0.109)	(0.119)	(0.157)	(0.660)
Mid ed	0.534***	-0.000	0.289***	0.433***	0.430***	0.470***	0.512***	0.500***	0.456***	0.482***	0.488***	0.562***	0.750***	0.873
	(0.069)	(0.000)	(0.058)	(0.056)	(0.059)	(0.081)	(0.093)	(0.087)	(0.084)	(0.083)	(0.106)	(0.143)	(0.158)	(0.676)
High ed	0.962***	0.328**	0.707***	0.723***	1.055***	1.063***	1.033***	0.963***	0.850***	0.884***	0.909***	1.064***	1.227***	1.127
	(0.081)	(0.134)	(0.067)	(0.110)	(0.135)	(0.090)	(0.091)	(0.089)	(0.085)	(0.072)	(0.120)	(0.151)	(0.143)	(0.730)
Very highed	1.393***	-0.000	0.216	1.690***	1.403***	1.382***	1.249***	1.544***	1.570***	1.440***	1.415***	1.238***	1.310***	0.882
	(0.122)	(0.603)	(0.735)	(0.224)	(0.068)	(0.129)	(0.227)	(0.247)	(0.173)	(0.107)	(0.111)	(0.159)	(0.196)	(0.737)
Married	0.022	-0.000	0.021	0.033	0.002	-0.016	0.007	-0.013	0.017	0.003	0.081**	0.159***	0.122	-0.055
	(0.028)	(0.000)	(0.036)	(0.038)	(0.033)	(0.034)	(0.041)	(0.039)	(0.038)	(0.033)	(0.035)	(0.050)	(0.095)	(0.220)
Christian	0.083	0.000	0.057	0.205**	0.259	-0.069	-0.012	-0.061	-0.187**	-0.059	0.152	0.331	-0.264	0.784**
	(0.108)	(0.000)	(0.055)	(0.101)	(0.275)	(0.198)	(0.156)	(0.178)	(0.092)	(0.114)	(0.157)	(0.434)	(0.480)	(0.330)
Muslim	-0.028	0.000	0.077	0.158*	0.184	-0.129	-0.133	-0.170	-0.257**	-0.145	0.087	0.197	-0.109	0.828**
	(0.113)	(0.000)	(0.055)	(0.091)	(0.278)	(0.210)	(0.150)	(0.177)	(0.103)	(0.107)	(0.169)	(0.454)	(0.494)	(0.324)
Houseland	-0.135***	0.000	-0.007	-0.038	-0.114*	-0.077*	-0.100**	-0.082*	-0.051	-0.099*	-0.000	-0.179*	-0.129	-0.410
	(0.048)	(0.000)	(0.048)	(0.042)	(0.059)	(0.045)	(0.043)	(0.049)	(0.055)	(0.059)	(0.064)	(0.099)	(0.178)	(0.253)
Locallang	-0.092***	-0.000	-0.064	-0.082**	-0.096**	-0.167***	-0.164***	-0.151***	-0.077	-0.056	-0.046	0.026	-0.027	-0.136
	(0.034)	(0.000)	(0.039)	(0.041)	(0.042)	(0.036)	(0.036)	(0.050)	(0.047)	(0.043)	(0.052)	(0.088)	(0.100)	(0.160)
South-East	0.081*	0.000	0.091**	0.004	0.042	-0.003	-0.091***	-0.092**	-0.056	-0.073*	-0.012	0.259***	0.319***	-0.141
	(0.048)	(0.000)	(0.036)	(0.047)	(0.034)	(0.036)	(0.034)	(0.039)	(0.049)	(0.042)	(0.041)	(0.087)	(0.117)	(0.283)
South-West	0.068	0.000	-0.027	-0.081**	-0.002	-0.041	-0.125***	-0.080	-0.084**	-0.087*	-0.131*	0.044	0.221	-0.135
	(0.055)	(0.000)	(0.043)	(0.040)	(0.041)	(0.046)	(0.036)	(0.051)	(0.039)	(0.046)	(0.067)	(0.091)	(0.175)	(0.286)
North	0.082	-0.000	0.132***	0.118**	0.158***	0.167***	0.065	0.100**	0.068	0.073	0.054	0.397*	0.944***	0.119
	(0.068)	(0.018)	(0.046)	(0.055)	(0.059)	(0.063)	(0.053)	(0.043)	(0.061)	(0.050)	(0.058)	(0.241)	(0.288)	(0.390)
Employer	0.172***	0.000	0.000	0.041	-0.027	-0.001	-0.026	0.044	0.094	0.056	0.188	0.998***	0.636***	0.026
	(0.062)	(0.118)	(0.144)	(0.103)	(0.101)	(0.057)	(0.065)	(0.106)	(0.074)	(0.084)	(0.271)	(0.215)	(0.185)	(0.229)
S.Employed	-0.326***	-0.000**	-0.227***	-0.326***	-0.444***	-0.452***	-0.403***	-0.382***	-0.342***	-0.303***	-0.231***	-0.180**	-0.079	0.016
	(0.031)	(0.000)	(0.049)	(0.031)	(0.035)	(0.029)	(0.035)	(0.035)	(0.029)	(0.060)	(0.046)	(0.078)	(0.084)	(0.175)
Cons	9.381***	10.491***	10.230***	10.034***	10.059***	10.456***	10.623***	10.787***	11.026***	11.065***	11.146***	11.430***	12.571***	11.455***
	(0.530)	(0.000)	(0.170)	(0.199)	(0.328)	(0.315)	(0.213)	(0.291)	(0.265)	(0.295)	(0.433)	(0.568)	(0.465)	(1.772)
Sigma/R^2	0.7369	0.0115	0.0705	0.1013	0.1284	0.1578	0.1681	0.1634	0.1552	0.1331	0.1073	0.0929	0.0885	0.0644
		* p<0.1; ** p<0.05; *** p<0.01												

The results of estimations [5.6] and [5.7] on the female 2004 earning population underscore the following:

1. The Heckman corrected conditional earnings premium/penalty estimates indicate that on average, self-employed own account female individuals earn about 32.6% less than their counterparts in paid work, while female employers earn about 17.2% more.
2. At the conditional quantile estimates (and at the median), self-employed own account female workers still consistently earn less than paid female employees.
3. At the conditional quantile estimates and at the median, female employers are typically the highest earning in the female sample. Although the thesis finds penalties in some cases, these are few and are found towards the lower/left and middle ends of the income distribution. Premiums are found towards the right side of the income distribution and are also significant in a few instances.
4. All other variable coefficients are as expected from the literature. (Note that in this case, living in the urban area/sector is sometimes associated with lower labour wages but increased education still has a significant and positive relationship with earnings, as found in the male results).

These results can also be highlighted in the graph (Figure 26) below:

Figure 26: Heckman and Quantile Labour Wage Premiums and Penalties for Females – Estimations [5.6] & [5.7]; Female Respondents

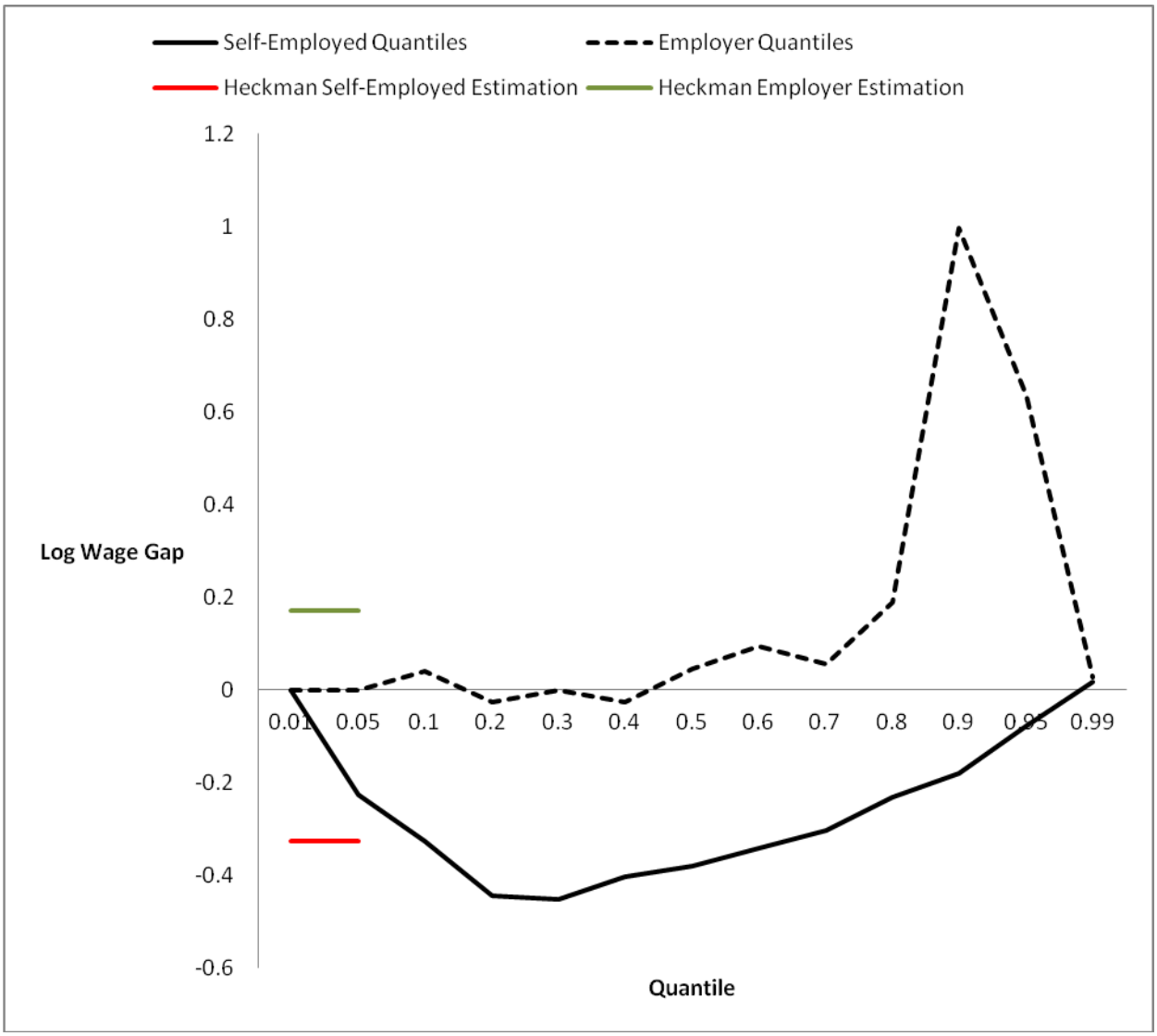


Figure 26 indicates that female employers in general experience earnings premiums, while female self-employed "own account" workers generally experience penalties in labour wages compared to paid workers. According to the literature, female workers with premiums in labour wage can be described as being in *pulled* self-employment since they are in a preferable employment option as regards labour wage, while those with penalties can be classed as being in *pushed* self-employment.

4.6.2: Potential Econometric Issues – Endogeneity Robustness Checks

As robustness checks to address the endogeneity issue discussed in Section [5.4.3], this thesis once again runs estimations [5.6] and [5.7] on the survey, but this time without the educational variables; this is due to a lack of suitable instruments correlated with the educational variables but uncorrelated with the error terms in the data – we are thus eliminating the "potential endogenous problem variable", although the results are valid as they are.

The literature however allows for the exclusion of the potential endogenous term completely and performing the estimation (Parker, 2009, Bargain and Kwenda, 2011). In line with this and as a form of robustness check, this thesis thus performs that analysis next to allow a comparison of results with and without the educational variable estimates, and the outcome is presented next[51]:

[51] The results of the first stage of the Heckman (1979) procedure, estimation [5.4] i.e. selection into employment (employer, paid work or self-employed "own account" labour status) are presented in the appendix section.

Table 23: Robustness Checks; Labour Wage Premiums and Penalties - Estimations [5.6] & [5.7] With & Without Educational Variables														
Employment	**Heckman**	**Whole Sample With Education Variables**												
	Estimation	**Q(.01)**	**Q(.05)**	**Q(.10)**	**Q(.20)**	**Q(.30)**	**Q(.40)**	**Q(.50)**	**Q(.60)**	**Q(.70)**	**Q(.80)**	**Q(.90)**	**Q(.95)**	**Q(.99)**
Employer	0.126***	0.000	0.007	0.065	0.089**	0.100***	0.048	0.109**	0.135***	0.070**	0.067	0.286***	0.316**	0.057
	(0.033)	(0.032)	(0.093)	(0.082)	(0.036)	(0.031)	(0.032)	(0.055)	(0.033)	(0.028)	(0.043)	(0.071)	(0.146)	(0.148)
SE OwnAcct	-0.160***	0.000**	-0.156***	-0.273***	-0.298***	-0.242***	-0.244***	-0.206***	-0.163***	-0.095***	-0.061***	0.076	0.076	0.182
	(0.017)	(0.000)	(0.037)	(0.029)	(0.025)	(0.021)	(0.021)	(0.023)	(0.018)	(0.019)	(0.019)	(0.051)	(0.053)	(0.108)
		Whole Sample Without Education Variables												
Employer	0.124***	0.000	-0.022	0.085	0.042	(0.030)	0.026	0.095***	0.104***	0.111	0.229***	0.230***	0.303***	0.007
	(0.034)	(0.032)	(0.073)	(0.096)	(0.037)	-0.007	(0.041)	(0.031)	(0.027)	(0.068)	(0.086)	(0.139)	(0.102)	(0.144)
SE OwnAcct	-0.331***	0.000	-0.255***	-0.382***	-0.486***	(0.036)	-0.436***	-0.409***	-0.349***	-0.299***	-0.261***	-0.103**	-0.049	-0.291***
	(0.017)	(0.000)	(0.034)	(0.028)	(0.022)	-0.500***	(0.016)	(0.017)	(0.020)	(0.019)	(0.033)	(0.046)	(0.064)	(0.112)
		Female Sample With Educational Variables												
Employer	0.172***	0.000	0.000	0.041	-0.027	-0.001	-0.026	0.044	0.094	0.056	0.188	0.998***	0.636***	0.026
	(0.062)	(0.118)	(0.144)	(0.103)	(0.101)	(0.057)	(0.065)	(0.106)	(0.074)	(0.084)	(0.271)	(0.215)	(0.185)	(0.229)
SE OwnAcct	-0.326***	-0.000**	-0.227***	-0.326***	-0.444***	-0.452***	-0.403***	-0.382***	-0.342***	-0.303***	-0.231***	-0.180**	-0.079	0.016
	(0.031)	(0.000)	(0.049)	(0.031)	(0.035)	(0.029)	(0.035)	(0.035)	(0.029)	(0.060)	(0.046)	(0.078)	(0.084)	(0.175)
		Female Sample Without Educational Variables												
Employer	0.152**	0.000	-0.022	0.013	-0.014	-0.076	-0.008	0.171**	0.120**	0.039	0.076	0.640***	0.528**	0.051
	(0.064)	(0.145)	(0.085)	(0.101)	(0.109)	(0.093)	(0.103)	(0.068)	(0.056)	(0.048)	(0.258)	(0.173)	(0.222)	(0.254)
SE OwnAcct	-0.511***	0.000	-0.286***	-0.369***	-0.536***	-0.656***	-0.673***	-0.635***	-0.623***	-0.570***	-0.455***	-0.416***	-0.318***	0.001
	(0.029)	(0.002)	(0.033)	(0.041)	(0.039)	(0.045)	(0.053)	(0.063)	(0.051)	(0.052)	(0.050)	(0.110)	(0.120)	(0.183)
		Male Sample With Educational Variables												
Employer	0.115***	0.000	0.056	0.144*	0.140***	0.099***	0.052	0.130*	0.191***	0.131***	0.075	0.155**	0.148	0.199
	(0.038)	(0.025)	(0.051)	(0.086)	(0.033)	(0.027)	(0.035)	(0.072)	(0.036)	(0.036)	(0.058)	(0.064)	(0.147)	(0.192)
SE OwnAcct	-0.086***	-0.000	-0.101**	-0.198***	-0.183***	-0.164***	-0.154***	-0.121***	-0.075***	0.029	0.018	0.108**	0.143	0.183
	(0.021)	(0.016)	(0.045)	(0.038)	(0.038)	(0.025)	(0.024)	(0.030)	(0.027)	(0.019)	(0.031)	(0.046)	(0.091)	(0.106)
		Male Sample Without Educational Variables												
Employer	0.119***	0.000	-0.091	0.157*	0.062	0.015	0.071	0.118*	0.083**	0.186***	0.207***	0.313***	0.177	0.138
	(0.039)	(0.000)	(0.108)	(0.090)	(0.041)	(0.034)	(0.052)	(0.062)	(0.036)	(0.056)	(0.067)	(0.120)	(0.135)	(0.122)
SE OwnAcct	-0.231***	0.000	-0.238***	-0.314***	-0.354***	-0.358***	-0.306***	-0.277***	-0.261***	-0.179***	-0.178***	-0.019	0.071	0.126
	(0.020)	(0.000)	(0.060)	(0.046)	(0.027)	(0.022)	(0.018)	(0.026)	(0.025)	(0.027)	(0.025)	(0.040)	(0.090)	(0.093)

* p<0.1; ** p<0.05; *** p<0.01

From the robustness checks excluding the educational variables, the estimates in Table 23 indicate that the initial results are robust and consistent to different specifications of the estimation. Employers generally experience an earnings premium while most self-employed "own account" workers in the main experience earnings penalties; although a few self-employed "own account" workers, especially individuals at the higher quantiles, experience earnings premiums as well.

These findings in totality indicate that a majority of the employers and a minority of own account self-employed workers, specifically those at the top ranges of the distribution, might be described as *pulled* into self-employment, since their conditional earnings reveal a premium in this employment option compared to paid work. However at the lower ends of the distribution, a majority of self-employed "own account" workers experience labour wage penalties compared to paid-employees; this might be indicative of *pushed* self-employment as described in the literature.

4.6.3: SUMMARY OF RESULTS - LABOUR FORCE PATICIPATION AND LABOUR WAGE

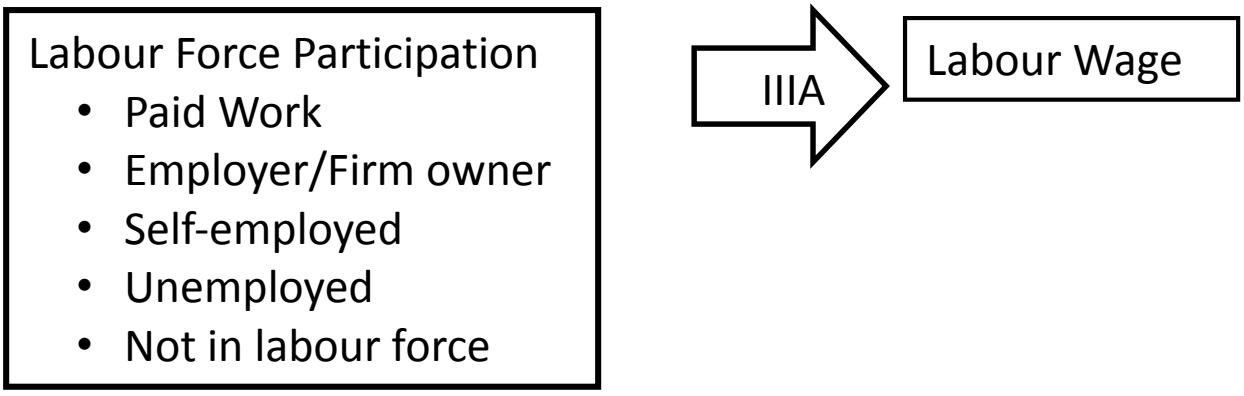


Figure 27 : Conceptual Model (Labour Force Participation and Labour Wage)

In this section, this thesis has analysed the heterogeneous labour wage returns to different labour force statuses conditional on observable differences. The starting point of this analysis has been highlighted in section 2.4.1, where this thesis discussed the notion that it is a conventional fact in the economics literature that individuals must receive some income from economic activities in other to survive. This may take several forms and is expressed as a simple identity by Standing (2000) as:

$$SI = W + CB + EB + SB + PB$$

Where SI is the individual's total social income, W is the money wage or income received from work (labour wage, the variable used in this thesis), CB is the value of benefits or support provided by the family, kin or the local community, EB is the amount of benefits provided by the enterprise in which the person might be working, SB is the value of state benefits provided; in terms of insurance benefits or other transfers and PB is private income benefits, gained through investment, including private social protection.

For the purposes of the investigations performed by this thesis, CB and EB were not included due to data limitations but also because they should not affect the results significantly. It is also a

conventional fact in the literature that SB and PB are negligible in developing countries; most developing countries including the one under investigation do not provide unemployment benefits or any form of support to individuals directly or indirectly. Thus we were left with W which represents the labour wage of individuals. Also since the unemployed and those individuals "not in the labour force" do not report or earn any labour wages, their part in this analysis was limited, and they were left out. (They did not report any labour wages, as expected by the literature.)

According to the empirical investigations carried out by this thesis by distinguishing employers, paid workers and self-employed "own account" workers and running estimations [5.6] and [5.7], results show that a majority of employers experience labour wage premiums throughout the income distribution, while a majority of self-employed "own account" individuals only experience labour wage premiums at the upper quantiles but suffer labour wage penalties at the lower quantiles, compared to paid workers. On closer examination, the own account workers who experience such premiums are most likely to be engaged in more rewarding/highly skilled activities and are more educated than typical own account workers (They are engaged in activities like accounting, spinning, retail, the use/sale of technological products and writing materials; perhaps these individuals might move to employer status later as opposed to those who experience penalties that are engaged in mundane activities like car repairs, gardening and petty trade).

Furthermore, it is the finding of this thesis that a labour wage penalty for the self-employed "own account" workers is mainly found towards the lower ends of the distribution (at the left hand side of the graphs and tables), where paid workers should enjoy some sort of minimum wage guarantee (currently ₦18,000 in Nigeria). As self-employed "own account" workers are not guaranteed such minimum wages, they seem to be substantially worse off towards the lower ends of the distribution, but improve later as such effects wear off.

Importantly, the thesis finds that there is indeed an ordering of earnings/incomes into low-income self-employment (which seems to be found mainly in the self-employment own account

occupational category), medium-income paid employment, and high-income self-employment (which seems to be found mainly in the employer occupational category), that corresponds to a similar ordering of low human capital, medium human capital and high human capital among the labour market participants. It is important to note that annual income variable is not adjusted for hours so we don't know if the results will hold in productivity terms.

From the perspective of rationality in terms of labour wage discussed in section 4.2, a majority of employers can be classed as *pulled* into this employment option, as they are advantaged in terms of labour wages; while a significant proportion of the self-employed "own account" individuals surveyed can be classed as *pushed* into this employment option, as they are disadvantaged in terms of labour wages. To the best of this researcher's knowledge, this distinction, analysis and its resultant finding is a new approach in the debate on occupational status within developing countries Two major caveats are that the thesis cannot tell if employers moved from paid work or self-employment into employer status (or even if this is the first occupational status of these individuals), and that the thesis cannot test for non-pecuniary factors in occupational statuses, as pointed out in section 4.2.

4.7: HOUSEHOLD CONSUMPTION

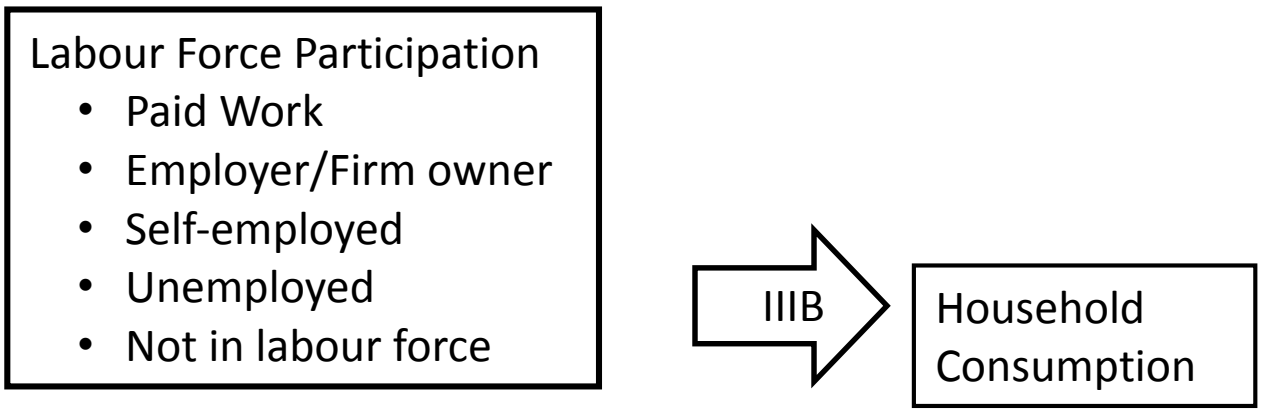


Figure 28: Conceptual Model (Labour Force Participation and Household Consumption)

So far, authors have overlooked the fact that decisions are often made at a household level, because household units might seek to maximise their joint/combined consumption as a household unit.

Consider two examples. The first involves a household of 5 individuals who are eligible for work; the household could decide to send two individuals into paid work and three individuals into self-employment. The second involves a two adult household made up of a husband and wife; the husband could go into full time paid work to bring home a steady income while the wife could be selected to go into self-employment, since the income from that sector is characterised by more variation, and being in self-employment could free the wife up for domestic duties like child rearing.

Having individuals in paid work could be a sort of buffer for the household, as paid-jobs are associated with a steady income/wage specified in the employment contract. Other individuals in self-employment could have months of higher earnings and months when things are not so positive; but the household could apportion such individuals into self-employment hoping that these individuals could achieve high income streams and achieve success in self-employment.

Thus the proportion of individuals in each occupational category could have implications for total household consumption. Also since labour wages (less savings, transfers and investments) should directly influence consumption positively, it will be beneficial to our overall inquiry to see if the relationship between occupational status and labour wages holds true for the proportions of occupational status and household consumption as well.

This thesis takes the relationship between occupational statuses and household consumption into account, and thus postulates that households could be strategic in deciding how many individuals they will allocate into each occupational category, as households jointly seek to maximise the total consumption of the combined household. The third assessment thus aims to examine the heterogeneous returns in terms of household consumption in relation to the household proportion of employment statuses.

According to the economics literature, the maximum level of utility for households is mathematically expressed as:

$$Max\ U = max\ U(x_1, x_2), \qquad s.t.\ I = p_1x_1 + p_2x_2,\ (x_1, x_2)\ price\ and\ goods.$$

Where $U(x_1, x_2)$ is the utility function representing household preferences, I (Income) depends on total labour in the household and Utility (U) implying welfare is directly linked to Consumption C_t (Household leisure and other non-pecuniary goods are not taken into consideration as already specified above).

4.7.1: METHODOLOGY 3.1: HOUSEHOLD CONSUMPTION– OLS REGRESSION ESTIMATION

The thesis denotes the adult equivalent consumption expenditure per household C_h as the dependent variable. Various employment states of the adult members of each household enter the regression as independent variables as shown in equation [5.8], and a series of controls that influence household consumption in the literature is also introduced into the estimation via x_h. The OLS estimation can be written simply as:

$$C_h = x_h\beta + SE_h + Emp_h + NonEm_h + \mu_h \qquad [5.8]$$

Estimated coefficients SE_h , $Emp_h$and $NonEm_h$ represent the proportions of household members in the self-employment, employer and non-employment categories respectively.

The total household consumption amount for each household in the analysis $C_h$is derived by adding together the naira (monetary) value of total household food purchases, total household food produced, total sundries, and total capital expenditure by households within the year, and then adjusting for adult equivalents. Recent studies suggest that a better measure of household consumption would be the adult equivalent scaled consumption[52] instead of the indiscriminate per-capita consumption (Demoussis and Mihalopoulos, 2001).

$x_h\beta$ consists of standard controls that are found in the literature to influence household consumption. They include the household head characteristics (the occupational industry of the

[52] Adult Equivalent Scales are measures that show how much an individual household member of a given sex and age contributes to the household expenditures relative to a standard household member: TEDFORD, J. R., CAPPS, O. & HAVLICEK, J. 1986. Adult equivalent scales once more—A developmental approach. *American Journal of Agricultural Economics,* 68**,** 322-333.

household head, dummies to indicate if the household head works in the private or public sector and gender of household head), the demographics of the household, location in terms of urbanity or region, dummies for household wealth, the size of the employable household and the educational attainment of household members.

4.7.2: METHODOLOGY 3.2: HOUSEHOLD CONSUMPTION– QUANTILE REGRESSION ESTIMATION

In the case of quantile regressions, the thesis can express for any household *h* on the τ^{th} quantile in the C_t distribution:

$$F^{-1}_{Ch}(\tau|x_h) = x_h\beta(\tau) + SE(\tau)_h + Emp(\tau)_h + NonEm(\tau)_h, \forall\tau\epsilon[0,1] \quad [5.9]$$

To gain a proper insight from this investigation, the quantile percentage points that are observed in this estimation are:. $10, .25, .50, .75, and\ .90$

Therefore the effects of the covariates reflect the quantiles of interest, in particular household consumption depending on the proportion of household members in each employment category. The thesis also uses CDF plots and other forms of descriptive statistics standard in the literature. The third empirical assessment thus involves:

(a) A household level welfare analysis involving OLS modified quantile regressions - Eqn [5.9].

(b) CDF plots showing the per capita consumption of households adjusted for adult equivalents dependent on the proportion of household members in each employment category.

(c) Other forms of descriptive statistics.

The insight generated from this is to determine if households with a greater proportion of any of the employment states are bound to suffer, relative to having a higher proportion of another other employment option. The econometric issues in this assessment are the same as in the previous one and the same measures were taken. Tests for multicollinearity and robustness proved satisfactory.

4.8: RESULTS OF ASSESSMENTS 3 - HOUSEHOLD CONSUMPTION

Concerning the third assessment, the thesis approaches the investigation into labour force participation from a different angle, by considering that households could be strategic in terms of how they participate in the labour force.

In the literature, most models and studies make use of individual variables - where the employment choice depends on the relative earning power of being either in self-employment or finding paid work. However in reality, decisions on occupational choice could be made on a household level as households try to make the most of their joint utility by ensuring that the household achieves a maximum expenditure stream.

This thesis takes this into account and postulates that households decide how many individuals will go into each occupational category as household members jointly seek to maximise the total consumption of the household. Consider a household of 5 individuals, who are all eligible for work: the household could decide to send 2 individuals into paid work and 3 individuals into self-employment, and the ratio of this decision could have implications for the total consumption available for the household.

On a practical note, however, having individuals in paid work could be a sort of buffer for the household, as paid-jobs are generally associated with less variation in labour wages. Individuals in self-employment could have months of higher earnings and months when things are "not so rosy"; but the household could send these individuals into self-employment status hoping that they could achieve the highest income streams available from employer status or upper quantile wage/income earning own account self-employment or maybe just out of necessity.

Thus the proportion of individuals in each occupational category could have implications for total household consumption. Also since labour wage (less savings, transfers and investments) should directly influence consumption positively, it will be beneficial to our overall inquiry to see if the relationship between occupational status and labour wages holds for the proportions of occupational statuses and household consumption as well.

This thesis makes thus makes a further contribution to the developing country debate by proportioning each household into employers, wage-earners and paid workers, and examining the relationship between occupational status proportion and total household consumption: a concept pioneered by Tamvada (2010) in the Indian context.

Therefore for the third assessment the 2009 survey is converted into household variables (due to data limitations, only the 2009 survey was used for this estimation; the 2004 survey did not include the household consumption variables). The sample used is restricted to employable individuals for whom household consumption is also reported, and this greatly reduces the data, to a total of 40,294 individuals from 6,919 households. The variables used and what they capture are presented in Table 24.

Table 24: Variables Used and What They Capture; 2009 LSMS Survey

Variable	What It Measures	How
Consumption		
FoodHH	Annual Total of Food Purchased by Household	Naira Value of Sum for Four Quarters in the Year; Food Purchased by Household.
OwnfoodHH	Annual Total of Food Produced by Household	Naira Value of Sum for Four Quarters in the Year; Food Produced by Household.
TtlSundryHH	Annual Total of Household Sundry Expenses	Total Naira Value of Sundry Household Expenditure.
TtlCapitalHH	Annual Total of Household Capital Expenses	Total Naira Value of Capital Household Expenditure.
TtConsptnHH [Dependent Variable]	Total Household Consumption in Naira	Sum of FoodHH, OwnfoodHH, TtlSundryHH and TtlCapitalHH.
[Controls/Independent Variables]		
Labour Force Proportion		
PropSE	Proportion of Self-Employed Household	Number of Household Members in Self Employment / Number of Household Adults.
PropPaidWorker	Proportion of Paid Worker Household	Number of Household Members in Paid Employment / Number of Household Adults.
PropEmployer	Proportion of Employer Household	Number of Household Members who are Employers / Number of Household Adults.
PropUnemployed	Proportion of Unemployed Household	Number of Household Members in Unemployment / Number of Household Adults.
PropNonLabourForce	Proportion of Non Labour Force Household	Number of Household Members not in Labour Force / Number of Household Adults.
Education		
PropNoEd	Adult Proportion of Household with No Education.	Number of Adult Household Members with No Education / Number of Household Adults.
PropLowEd	Adult Proportion of Household with Low Education.	Number of Adult Household Members with Low Educational Attainments / Number of Household Adults.
PropMidEd	Adult Proportion of Household with	Number of Adult Household Members with Medium Educational

	Medium Education	Attainments / Number of Household Adults.
PropHighEd	Adult Proportion of Household with High Education.	Number of Adult Household Members with High Educational Attainments / Number of Household Adults.
PropVeryHighEd	Adult Proportion of Household with Very High Education.	Number of Adult Household Members with Very High Educational Attainments / Number of Household Adults.

Table 24 Cont'd		
Demographics		
Btw16to30	Proportion of Household between 16 to 30 years old.	Number of Household Members aged 16 to 30 years/ Number of Household Adults.
Btw31to40	Proportion of Household between 31 to 40 years old.	Number of Household Members aged 31 to 40 years/ Number of Household Adults..
Btw41to50	Proportion of Household between 41 to 50 years old.	Number of Household Members aged 41 to 50 years/ Number of Household Adults.
Btw51to60	Proportion of Household between 51 to 60 years old.	Number of Household Members aged 51 to 60 years/ Number of Household Adults.
Above60	Proportion of Household above 60 years old.	Number of Household Members above 60 years / Number of People in Household.
MeanHHAge	Mean Household Age	Sum of Household Age / Number of Household Adults.
PropFemale	Employable Female Proportion of Household.	Number of Adult Females in Household / Number of Household Adults.
FemaleHHead	A Female Household Head	Dummy = 1 if Household head is Female.
PropMarried	Married Proportion of Household.	Number of Married Individuals in Household / Number of Household Adults.
PropDivWidow	Divorced/Widowed Proportion of Household.	Number of Divorced or Widowed Individuals in Household / Number of Household Adults.
Location		
Urban	Urban Residence	Dummy = 1 if Household is in Urban Area.
Rural	Rural Residence	Dummy = 1 if Household is in Rural Area.
Head Employment Sector		
Public	Household Head is in Public	Dummy =1 if

	Sector	Employment is in Public Sector.
Private	Household Head is in Private Sector	Dummy =1 if Employment is in Private Sector.
Regional Controls		
North	Northern Region	Dummy = 1 if Household is in North.
Mid-belt	Mid-belt Region	Dummy = 1 if Household is in Mid-belt.
South-East	South-East Region	Dummy = 1 if Household is in South - East.
South-West	South-West Region	Dummy = 1 if Household is in South -West.
Head Industry Class		
Real	Real/Manufacturing	Dummy = 1 if Employment is in Manufacturing Industry.
Agriculture	Agricultural Industry	Dummy = 1 if Employment is in Agricultural Industry.
Trade	Trade Industry	Dummy = 1 if Employment is in Trade Industry.
Service	Service Industry	Dummy = 1 if Employment is in Service Industry.

While it is true that the 2009 sample has been decimated by the specification(s), the sample left is a reliable representative sample and is what is available. The author has taken the appropriate measures according to good practise to ensure that the sample left is suitable. The descriptive/summary statistics for the household converted survey variables shown in Table 24 above are presented next in Table 25:

Table 25: Summary Statistics; Household Variables used in Assessment 3 – 2009 LSMS Survey

Variable	Mean (Std Dev)
Consumption	
FoodHH	53,357.958 (16,775.461)
OwnfoodHH	246.799 (2.544)
TtlSundryHH	4,979.831 (51.897)
TtlCapitalHH	12,912.332 (161.838)
TtConsptnHH	71,496.921 (16,776.484)
LogTtConsptnHH (Log Value)[53]	9.762 (0.005)
Labour Force Proportion	
PropSE	0.414 (0.002)
PropPaidWorker	0.265 (0.002)
PropEmployer	0.028 (0.001)
PropUnemployed	0.156 (0.002)
PropNonLabourForce	0.136 (0.002)
Education	
PropNoEd	0.057 (0.001)
PropLowEd	0.349 (0.002)
PropMidEd	0.461 (0.002)
PropHighEd	0.128 (0.002)
PropVeryHighEd	0.005 (0.000)

[53] This thesis once again makes use of the "total household consumption per capita value in the logged form"; the reason for this is the same as for the labour wage estimation as explained in section 4.6.

Table 25 Cont'd; Demographics	
Btw16to30	0.442
	(0.002)
Btw31to40	0.258
	(0.002)
Btw41to50	0.180
	(0.002)
Btw51to60	0.097
	(0.001)
Above60	0.023
	(0.001)
MeanHHAge	34.858
	(0.057)
PropFemale	0.472
	(0.002)
FemaleHHead	0.055
	(0.001)
PropMarried	0.730
	(0.002)
PropDivWidow	0.030
	(0.001)
Location	
Urban	0.516
	(0.002)
Rural	0.484
	(0.002)
Head Employment Sector	
Public	0.213
	(0.002)
Private	0.058
	(0.001)
Regional Controls	
North	0.191
	(0.002)
Mid-belt	0.168
	(0.002)
South-East	0.297
	(0.002)
South-West	0.345
	(0.002)
Head Industry Class	
Real	0.304
	(0.002)
Agriculture	0.004
	(0.000)
Trade	0.042
	(0.001)
Service	0.092
	(0.001)
N: 6,919Households;	40,294 Individuals

The summary statistics indicate the following. The total consumption for households averages around ₦71,496.921 and a huge proportion of that is spent on household feeding. On average, households have more adult members in self-employment and then engaged in paid work, followed by unemployed individuals and then those "not in labour force"; the employer category is the smallest cluster as expected from the literature and as seen in the previous estimations. The educational proportions reveal that most households have adults with medium to low education, and then high and no educational categories: the very high education category is once again the smallest group. As for demographics, most households have members in the lower age categories and the mean age of household members is 35 years. About half of the average household is female and most adults report being married.

The sample is balanced across urban and rural locations and most household heads seem to work in the public sector (for the government: an indication that such jobs are associated with some sort of job security as supported by the literature on developing countries). The regional controls also reveal that our sample is somewhat balanced across regions, and most household heads once again report belonging to the real[54]/manufacturing industry sector.

As stated in section 5.7.2 , this thesis will utilize quantile regressions when investigating the relationship between household employment proportions and household consumption (An Ordinary Least Square "OLS" Estimation is included in the Appendix section, Table 32). In the case of quantile regressions, we can write for any household h the τ^{th} quantile in the C_t distribution:

$$F_{Ch}^{-1}(\tau|x_h) = x_h\beta(\tau) + SE(\tau)_h + Emp(\tau)_h + Usp(\tau)_h, \forall\tau\epsilon[0,1] \quad [5.9]$$

To enable proper insight from this investigation, the quantile percentage points that are observed in this estimation are:. $10, .25, .50, .75, and\ .90$. Therefore the effects of the covariates reflect the

[54] The real sector in this thesis consists of industries including manufacturing, construction, mineral extraction and mining, etc.

quantiles of interest, in particular household consumption depending on the proportion of household members in each employment state. The results of estimation [5.9] are presented next:

Table 26: Quantile Regression; Household Proportions and Consumption – Estimation [5.9]

	Q(.10)	Q(.25)	Q(.50)	Q(.75)	Q(.90)
Labour Force Proportion					
PropSE(Own Account)	0.070*	0.019**	-0.084***	-0.065***	-0.094**
	(0.036)	(0.032)	(0.026)	(0.024)	(0.047)
PropEmployer	0.360***	0.262***	0.121**	0.161***	0.243***
	(0.057)	(0.058)	(0.050)	(0.022)	(0.067)
PropUnemployed	0.160**	0.042	0.082*	0.057*	0.121*
	(0.028)	(0.045)	(0.033)	(0.025)	(0.058)
PropNonLabourForce	0.130**	0.002	-0.005	-0.115***	-0.218***
	(0.026)	(0.051)	(0.032)	(0.023)	(0.029)
Education					
PropLowEd	-0.146***	-0.120***	-0.022	-0.007	-0.021
	(0.028)	(0.036)	(0.021)	(0.058)	(0.033)
PropMidEd	-0.075**	0.026	0.089***	0.086	0.080**
	(0.034)	(0.035)	(0.021)	(0.055)	(0.033)
PropHighEd	0.069*	0.178***	0.333***	0.338***	0.456***
	(0.038)	(0.043)	(0.030)	(0.063)	(0.051)
PropVeryHighEd	-0.074	-0.042	0.211**	0.349***	1.535***
	(0.152)	(0.219)	(0.104)	(0.102)	(0.060)
Demographics					
Btw31to40	-0.033	-0.004	0.080***	0.098***	0.357***
	(0.040)	(0.037)	(0.026)	(0.031)	(0.054)
Btw41to50	-0.136*	-0.026	0.120***	0.284***	0.501***
	(0.076)	(0.056)	(0.040)	(0.055)	(0.070)
Btw51to60	-0.128	0.070	0.170***	0.318***	0.785***
	(0.095)	(0.072)	(0.050)	(0.077)	(0.124)
Above60	0.132	0.285***	0.342***	0.574***	1.202***
	(0.136)	(0.093)	(0.093)	(0.101)	(0.177)
MeanHHAge	0.008***	-0.001	-0.007***	-0.013***	-0.030***
	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
PropFemale	0.036	0.055***	-0.015	0.030*	0.074***
	(0.023)	(0.016)	(0.012)	(0.015)	(0.025)
FemaleHHead	-0.234***	-0.075	-0.182***	-0.215***	-0.163***
	(0.067)	(0.048)	(0.023)	(0.046)	(0.041)
PropMarried	-0.036	0.001	0.052***	0.006	0.137***
	(0.031)	(0.018)	(0.020)	(0.022)	(0.025)
PropDivWidow	0.048	0.114**	0.326***	0.256***	0.362***
	(0.044)	(0.056)	(0.046)	(0.051)	(0.060)
Location					
Urban	0.217***	0.200***	0.202***	0.184***	0.129***
	(0.017)	(0.021)	(0.016)	(0.014)	(0.020)
Head Employment Sector					
Public	0.081**	0.092**	0.041*	0.128***	0.015
	(0.036)	(0.037)	(0.022)	(0.018)	(0.031)

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 26 Cont'd					
Variable	**Q(.10)**	**Q(.25)**	**Q(.50)**	**Q(.75)**	**Q(.90)**
Regional Controls					
North	-0.309***	-0.226***	-0.153***	-0.065***	0.039
	(0.029)	(0.024)	(0.022)	(0.018)	(0.034)
South-East	0.307***	0.250***	0.324***	0.395***	0.274***
	(0.022)	(0.019)	(0.019)	(0.015)	(0.024)
South-West	0.198***	0.322***	0.440***	0.494***	0.444***
	(0.028)	(0.021)	(0.016)	(0.021)	(0.021)
Head Industry Class					
Real	-0.030	0.010	0.032	-0.019	-0.081*
	(0.020)	(0.026)	(0.025)	(0.022)	(0.043)
Agriculture	0.105	-0.060	0.172	-0.150***	-0.573***
	(0.407)	(0.102)	(0.209)	(0.046)	(0.044)
Trade	-0.213***	0.058	0.023	0.047**	-0.087*
	(0.046)	(0.073)	(0.032)	(0.024)	(0.052)
Service	-0.061**	-0.018	0.076***	0.069**	-0.006
	(0.026)	(0.040)	(0.025)	(0.034)	(0.045)
C	8.180***	8.847***	9.467***	10.213***	11.224***
	(0.056)	(0.072)	(0.047)	(0.075)	(0.057)
Pseudo R^2	0.0564	0.0479	0.0509	0.0519	0.0465

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

The dependent variable for estimation [5.9] in Table 26 is the log of total household consumption expenditure (per-capita household consumption) expressed in naira amounts. The base category for occupation is the proportion of economically active individuals in the household who are in paid work; for education; it is the household proportion with no education; for marital status, it is the unmarried; for region; it is the mid-belt; for age group it is household proportion aged between 16 to 30 ; for location, the rural area; and for sector, the private sector.

The results in Table 26 indicate that households that have a higher proportion of employers enjoy the highest household consumption expenditure compared to any other category; this finding is consistent and significant. Households with a higher proportion of employers have significantly higher consumption levels than any other occupational proportion at all quantiles - this is consistent with our initial labour wage analysis; and can be translated to imply that employers have converted their higher income streams in terms of labour wage premiums into household expenditure. It also agrees with the findings of Tamvada (2010).

For a comparison between paid worker proportions and self-employed "own account" proportions, the estimation crucially shows that households that have a higher proportion of paid workers have lower consumption levels than households that have a higher proportion of self-employed own account members at lower quantiles (between the 10^{th} and 25^{th} quantiles) and then have higher consumption levels at upper quantiles (from the 50^{th} to the 90^{th} quantiles).

This would seem to imply that households could send individuals into own account self-employment because such activities could help contribute to household consumption in ways that labour wage derived from paid-jobs cannot; hence looking at the occupational status debate from the angle of labour wage alone could be insufficient. For example, self-employment could free individuals to pursue activities that benefit the household collectively and individually, while paid work is only associated with fixed monetary incomes where the individual is at a designated place of employment and can only perform contractually stipulated duties.

It might also be preferable to be in self-employment (e.g to have a corner shop or venture into some skill area as one's own boss) in such countries rather than to be engaged in a low paying paid job at the lower welfare quantiles – the skills possessed by individuals in such paid-jobs[55] are not lofty and their labour wages reflect this. At the upper consumption quantiles however, individuals in paid work are more likely to possess significant educational attainments to attain such "higher welfare" jobs. On closer examination, the own account workers in this case are engaged in activities like sales, tailoring, car repairs and machinery work.

Hence once again, the thesis finds a heterogeneous relationship between paid work, self-employment and household consumption. While employers are clearly better off, self-employed "own account" workers are worse off at the upper quantiles while paid workers are worse off at the lower quantiles (unlike the labour wage estimation).

[55] Individuals with such paid-jobs include gardners, personal drivers, security personnel unlike highly skilled persons at the other end of the quantile.

Other variables in the estimation produced results as expected from the literature; having a higher proportion of more educated individuals is good for household consumption and so is living in an urban area. Households with female heads are worse off; and households in the northern region of the country are also worse off in terms of household consumption, as highlighted in the reports by the World Bank and NBS on Nigeria. Also, having the household head work for the government seems to be positively linked with household consumption.

Furthermore, the literature on household consumption in developing countries recommends the use of "Adult Equivalent Scales" (AES) when engaging in estimations involving household consumption. Adult equivalent scales are measures that show how much an individual household member of a given sex and age contributes to the household expenditures relative to a standard household member (Tedford et al., 1986). This allows investigators to properly probe into the household consumption of each member of the household instead of the indiscriminate use of per-capita or total household consumption.

For example, in two households of five individuals with the same household consumption value, the ratio of adults to children and their gender could have implications for the actual amount of consumption obtainable by each individual. If a household has more male adults than children, the actual consumption each individual can enjoy is reduced as male adults typically need to consume more than children: thus the household with more children would actually enjoy more consumption if the household consumption value for both households is the same, and the per-capita value of total consumption could be a wrong indicator.

The adult equivalent scales used in this thesis are in line with the developing country literature proposed by Demoussis and Mihalopoulos (2001) and Deaton and Muellbauer (1986). To test for robustness, the estimations were also run to specifications without the adult equivalence scales (and the results were robust). The adult equivalence scales used are presented below in Table 27.

Table 27: Adult Equivalent Scales used in Assessment 3 – 2009 LSMS Survey

Individual Characteristics (Age and Sex)	**Adult Equivalent Conversion Factor**
Less than 1year	0.29
Between 1year and 3years	0.51
Between 4years and 6years	0.71
Between 7years and 10years	0.78
Male (age) 11-14	0.98
Male (age) 15-18	1.15
Male (age) 18-50	1
Male above (age) 50	0.9
Female (age) 11-14	0.86
Female (age) 15-18	0.9
Female (age) 18-50	0.96
Female above (age) 50	0.75

The above adult equivalent scales were used on the household consumption expenditure for each household to convert the dependent variable as recommended by the literature into an accurate reflection of household consumption; and the estimation [5.9] was run again as a robustness check. The summary statistic for the converted consumption variable is presented below:

Table 28: Summary Statistic: Adult Equivalent Total Household Consumption – 2009 LSMS Survey

Variable	Mean (Std Dev)
Consumption	
TtConsptnHH[Total Household Consumption]	71,496.921 (16,776.484)
LogTtConsptnHH (Log Value)	9.762 (0.005)
LogAESTtConsptnHH (Log Value) [Adult Equivalent Household Consumption]	11.976 (0.006)

As stated, estimation [5.9] was run with the log value of the adult equivalent (A.E.) household consumption for households as the dependent variable in place of the indiscriminate per-capita household consumption used in Table 26, and the results are presented next:

Table 29: Quantile Regression: Household Proportions and A.E. Consumption – Estimation [5.9]

Dependant Variable LogAESTtConsptnHH	Q(.10)	Q(.25)	Q(.50)	Q(.75)	Q(.90)
Labour Force Proportion					
PropSE(Own Account)	0.022**	0.016**	-0.160***	-0.083*	0.067
	(0.042)	(.046)	(0.032)	(0.044)	(0.885)
PropEmployer	0.365***	0.304	0.164***	0.140***	0.661***
	(0.061)	(5.140)	(0.063)	(0.045)	(0.202)
PropUnemployed	-0.022	-0.083	-0.092*	-0.030	0.215
	(0.068)	(0.839)	(0.050)	(0.039)	(1.668)
PropNonLabourForce	-0.065	-0.022	-0.167***	-0.132***	-0.186
	(0.052)	(6.270)	(0.035)	(0.037)	(1.280)
Education					
PropLowEd	-0.049	-0.032	-0.056	0.062	0.150
	(0.050)	(4.848)	(0.038)	(0.052)	(0.785)
PropMidEd	0.228***	0.236	0.190***	0.339***	0.400
	(0.046)	(0.783)	(0.036)	(0.055)	(0.505)
PropHighEd	0.519***	0.613	0.680***	0.861***	0.947***
	(0.067)	(4.222)	(0.048)	(0.062)	(0.285)
PropVeryHighEd	0.569**	0.248	0.415**	0.562*	2.101**
	(0.247)	(13.247)	(0.180)	(0.337)	(0.948)
Demographics					
Btw31to40	0.026	0.124	0.002	0.171***	0.260
	(0.048)	(0.587)	(0.029)	(0.035)	(1.009)
Btw41to50	-0.296***	-0.025	-0.179***	0.231***	0.411
	(0.102)	(4.820)	(0.046)	(0.069)	(0.839)
Btw51to60	-0.446***	-0.065	-0.390***	0.193*	0.492
	(0.098)	(8.532)	(0.072)	(0.100)	(2.053)
Above60	-0.336**	0.087	-0.390***	0.331***	0.625
	(0.168)	(10.574)	(0.109)	(0.119)	(2.515)
MeanHHAge	0.032***	0.013	0.024***	0.003	-0.009
	(0.004)	(0.325)	(0.003)	(0.003)	(0.032)
PropFemale	0.176***	0.161	0.109***	0.135***	0.073
	(0.043)	(0.857)	(0.017)	(0.021)	(0.822)
FemaleHHead	-0.602***	-0.443	-0.376***	-0.454***	-0.415
	(0.062)	(5.017)	(0.024)	(0.036)	(0.497)
PropMarried	0.281***	0.337	0.216***	0.211***	0.166
	(0.043)	(0.776)	(0.032)	(0.052)	(0.723)
PropDivWidow	0.471***	0.436	0.396***	0.455***	0.516
	(0.075)	(5.323)	(0.050)	(0.101)	(0.462)
Location					
Urban	0.447***	0.431	0.332***	0.230***	0.265***
	(0.021)	(3.034)	(0.021)	(0.020)	(0.093)
Head Employment Sector					
Public	0.104*	0.104	0.009	0.130***	0.145**
	(0.061)	(1.987)	(0.023)	(0.031)	(0.057)

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 29 Cont'd					
Variable	**Q(.10)**	**Q(.25)**	**Q(.50)**	**Q(.75)**	**Q(.90)**
Regional Controls					
North	-0.380***	-0.349	-0.173***	-0.067*	0.050
	(0.048)	(6.957)	(0.016)	(0.036)	(0.049)
South-East	0.298***	0.344	0.370***	0.406***	0.406
	(0.055)	(4.229)	(0.028)	(0.029)	(0.274)
South-West	0.130**	0.294	0.469***	0.497***	0.480
	(0.062)	(2.479)	(0.028)	(0.031)	(0.909)
Head Industry Class					
Real	0.056	0.039	0.022	0.033	-0.132
	(0.041)	(2.461)	(0.028)	(0.021)	(1.306)
Agriculture	-0.303	0.390	0.031	0.106	-0.255
	(0.347)	(0.466)	(0.109)	(0.128)	(0.211)
Trade	-0.076	0.006	0.106***	-0.001	-0.041
	(0.056)	(1.783)	(0.036)	(0.049)	(1.648)
Service	-0.023	0.055	0.108***	0.040	-0.154
	(0.029)	(0.856)	(0.037)	(0.027)	(0.426)
C	8.841***	9.871***	10.497***	11.553***	12.473***
	(0.125)	(1.698)	(0.090)	(0.078)	(0.810)
Pseudo R^2	0.0567	0.056	0.0809	0.0819	0.0875

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Once again, the base category for occupation is the proportion of economically active individuals in the household who are in paid work; for education, it is the household proportion with no education: for marital status, it is the unmarried; for region, it is the mid-belt; for age group it is household proportion aged between 16 and 30; for location, the rural area; and for sector, the private sector.

The results in Table 29 yet again indicate that households that have a higher proportion of employers enjoy the highest household consumption expenditure compared to any other category; this finding is consistent and significant. Households with a higher proportion of employers have significantly higher consumption levels than any other occupational proportion at all quantiles - this is consistent with the findings highlighted in Table 28.

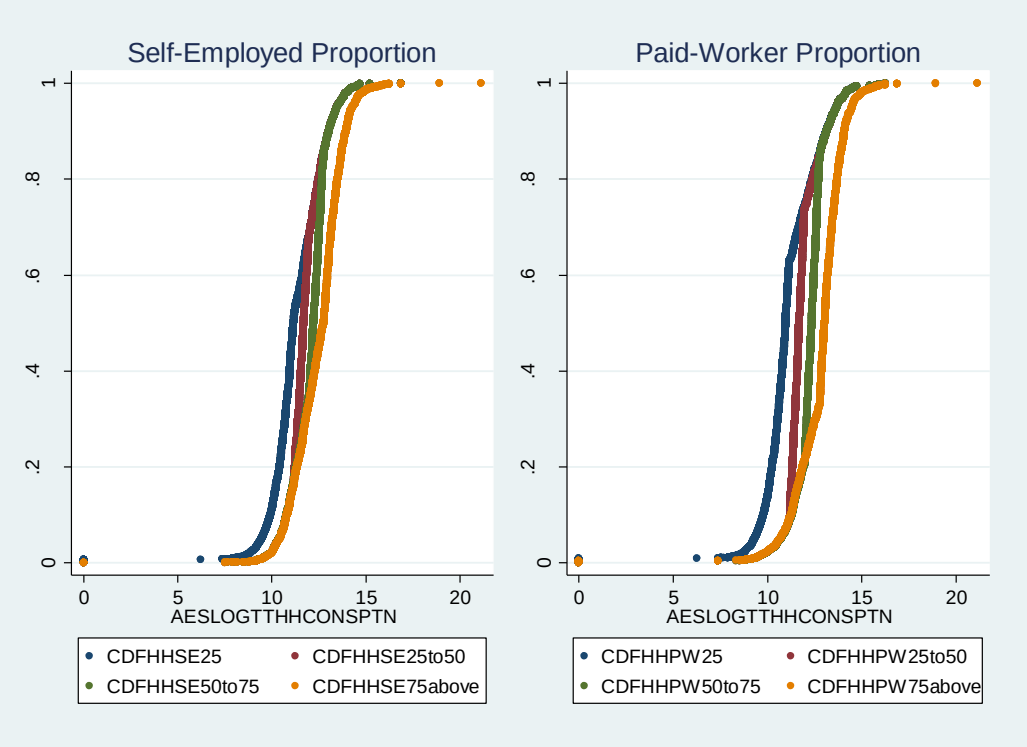
For a comparison between paid worker proportions and self-employed "own account" proportions, the estimation once more crucially shows that households that have a higher proportion of paid workers have lower consumption levels than households that have a higher proportion of self-employed adult members at lower quantiles (between the 10^{th} and 25^{th} quantiles), and then have higher consumption levels at upper quantiles (from the 50^{th} to the 75^{th} quantiles; the 90^{th} quantile differences are insignificant).

This finding is consistent with the results shown in Table 28 when the adult equivalent scales had not been used to operationalise the total household consumption. Note that OLS estimations presented in the Appendix, Table 32 do not offer us this insight. This highlights the importance of this thesis performing quantile regression estimations as opposed to settling for OLS estimations commonly found in the literature.

Moving on to more detailed comparisons between paid worker proportions and self-employed "own account" proportions, Figure 29 presents the log adult equivalent consumption on the X-axis and the cumulative probability on the Y-axis for the proportion of self employed "own account" workers and paid worker proportion households respectively, for below 25th, 25th – 50th, 50th-75th and above 75th quintiles.

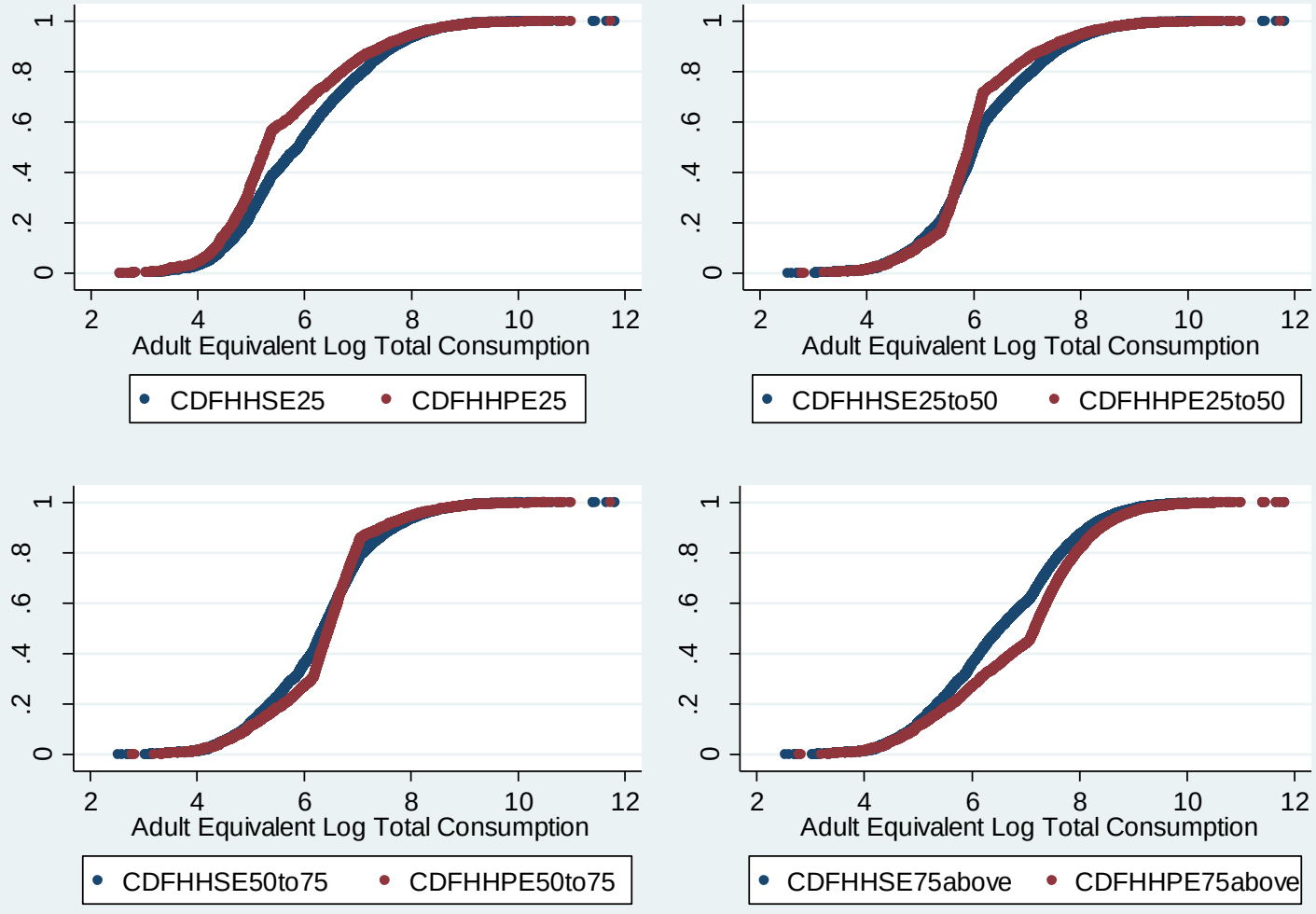
Examining each of the plots in turn, it can be observed that belonging to one employment category does not guarantee a higher household consumption amount compared to members of the other employment option; rather it depends on the welfare quantile to which the individual belongs, as consumption clearly improves/increases for each occupational category as the plot-lines move right for each group.

Figure 29: Household Consumption Cumulative Distribution Plots: Self-Employed (Own Account) Vs Paid Work



Finally, Figure 30 confirms the findings from Table 29. The blue line representing the self-employed "own account" proportion can be seen on the right hand side of the distribution in the first diagram, but as household consumption increases across the CDF quantiles, observe the red line representing paid workers crossing over from the left hand side to the right hand side of the graph diagrams, indicating that the paid worker sample at the higher quantiles enjoy higher household consumption in these ranges.

Figure 30: Self-Employment Vs Paid Employment: Household Consumption Quantiles



HHSE: Prop of Household in Self-Employment. **HHPE**: Prop of Household in Paid Work.

These results clearly relate to the theoretical arguments that the self-employed are not a homogenous group who can be defined as all being either "pushed" or "pulled" into self-employment. The self-employed "own account" workers at the lower end of the distribution (represented by the blue line) enjoy higher consumption levels than the paid workers at the same level, and can be argued to be influenced by *pulled* effects. At the other (right hand) side of the distribution, however, the paid workers (represented by the red line) experience higher consumption levels than the self-employed "own account" workers, and in line with the literature, the self-employed at this part of the household consumption distribution will normally be categorized as *pushed.*

4.8.1: SUMMARY OF RESULTS - LABOUR FORCE PARTICIPATION AND HOUSEHOLD CONSUMPTION

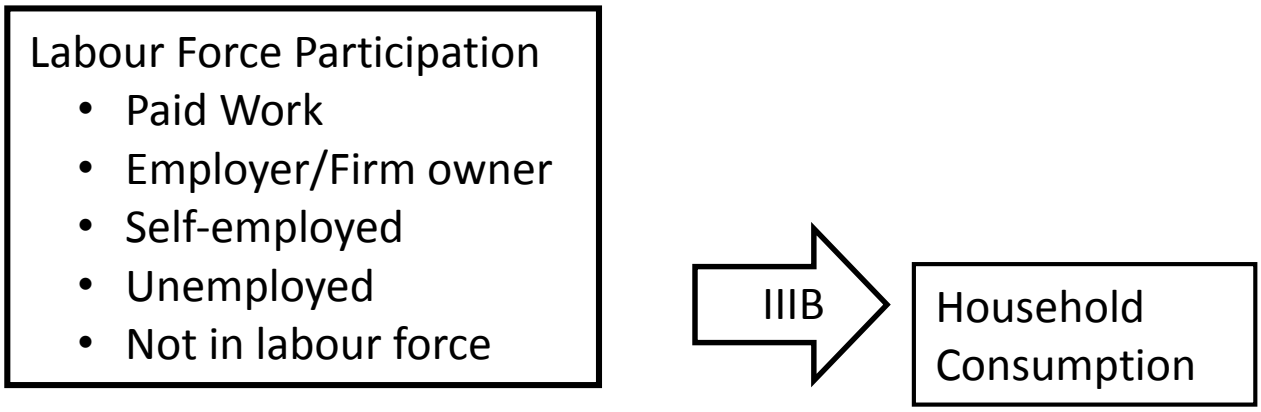


Figure 31 : Conceptual Model (Labour Force Participation and Household Consumption)

In this section, the thesis has considered that households could be strategic in terms of how they participate in the labour force. It has postulated that households might decide how many individuals they will send into each occupational category as all individuals in the household possibly jointly seek to maximise the total consumption of the household.

It has found that households that have a higher proportion of employers enjoy the highest household consumption expenditure compared to any other category; this finding is consistent and significant. Households with a higher proportion of employers have significantly higher consumption levels than any other occupational proportion at all quantiles - this is consistent with our initial labour wage analysis; and can be translated to imply that employers have converted their higher income streams, in terms of labour wage premiums, into household expenditure. This also agrees with the findings of Tamvada, 2010.

When the thesis compared paid worker and self-employed "own account" proportions, it found that households that have a higher proportion of paid workers have lower consumption levels than

households that have a higher proportion of self-employed adult members at lower quantiles (between the 10^{th} and 25^{th} quantiles), and then have higher consumption levels at upper quantiles (from the 50^{th} to the 90^{th} quantiles).

This shows that the self-employed consist of individuals who are better-off than the paid employed in the lower welfare quantiles and worse off at the higher ones. These results are robust to alternate empirical specifications. From the literature, the self-employed at the lower quantiles would be described as being *pulled* into self-employment because they enjoy higher welfare levels, while those at the upper quantiles would be described as being *pushed* into self-employment as they appear to be worse off than their paid employee counterparts.

4.9: ASSESSMENTS SUMMARY

Together, these three assessments enable the thesis to look at the occupational status incidence and its consequences from different angles. We are able to decide if any occupational statuses represent a disadvantaged or an advantaged group, in terms of education, labour wage and household consumption. In addition, since one of the themes in the literature is that men and women may experience self-employment differently, the differentiation in terms of gender can help to draw further insights empirically on whether gender affects the occupational incidence in a dissimilar way.

Furthermore, the thesis can indirectly test the notion by the three assessments that the self-employed are experiencing push or pulled self-employment.

1. In the first case, if the thesis observes that the self-employed are chiefly less educated individuals, then it could be true that lack of educational qualifications and skills "pushes" people to find work in this sector, since it can be hypothesised that they have been rationed out of the paid wage sector due to their lack of formal education – a prerequisite for formal wage employment in Nigeria and indeed other developing countries.

2. In the second case, if the thesis observes that the self-employed are actually worse off in terms of labour wage compared to their paid work counterparts after controlling for observable characteristics, then this would provide some evidence of pushed self-employment. This would stem from rationality, as judicious individuals should opt for the employment option that gives the highest returns to their endowments so as to maximise utility from consumption which is derived through labour wage/income.

Hence if the self-employed persist in a lower labour wage earning occupational option then it could be for either non-pecuniary reasons or because they have no other option, indicating pushed self-employment with regards to labour wages[56]. (This thesis does not consider non-pecuniary reasons for employment.) If they already belong to the higher labour wage earning occupation then they are clearly rational and have chosen their more favourable option, signalling pulled self-employment.

3. Finally, since members of the household could choose to maximise joint utility by ensuring that they achieve the highest possible expenditure stream, they can opt for occupations that ensure their joint utmost possible consumption. The third assessment will thus enable the thesis to further test the push-pull hypothesis from the point of view of households. If a higher proportion of self-employed household members increases household welfare (measured by household consumption) then there is evidence of pulled self-employment, from the benefits of a higher consumption to be derived, and vice-versa.

[56] There are arguments that earning less by self-employed individuals is compensated by other factors such as freedom and other non-pecuniary factors. HAMILTON, B. H. 2000. Does entrepreneurship pay? An empirical analysis of the returns to self-employment. *Journal of political economy*, 108**,** 604-631.So this finding doesn't necessarily mean the self-employed who earn less than paid workers are pushed into self-employment, even though it can be inferred by their lower incomes that they are worse-off. It becomes push self-employment when they are in such jobs out of necessity i.e. they want to move out of such jobs to earn higher incomes but cannot i.e. they seek to enjoy maximum utility given their observable characteristics – which the econometric modelling/assumptions imply.

CHAPTER 5: SUMMARY & CONCLUSIONS

5.1: SUMMARY OF OBJECTIVES, METHODOLOGY AND DATA

The concern of this thesis was to understand where differences in labour wage and household consumption levels come from, as they relate to any of the employment statuses in developing countries. To enable a clearer insight into these issues the conceptual model below was introduced.

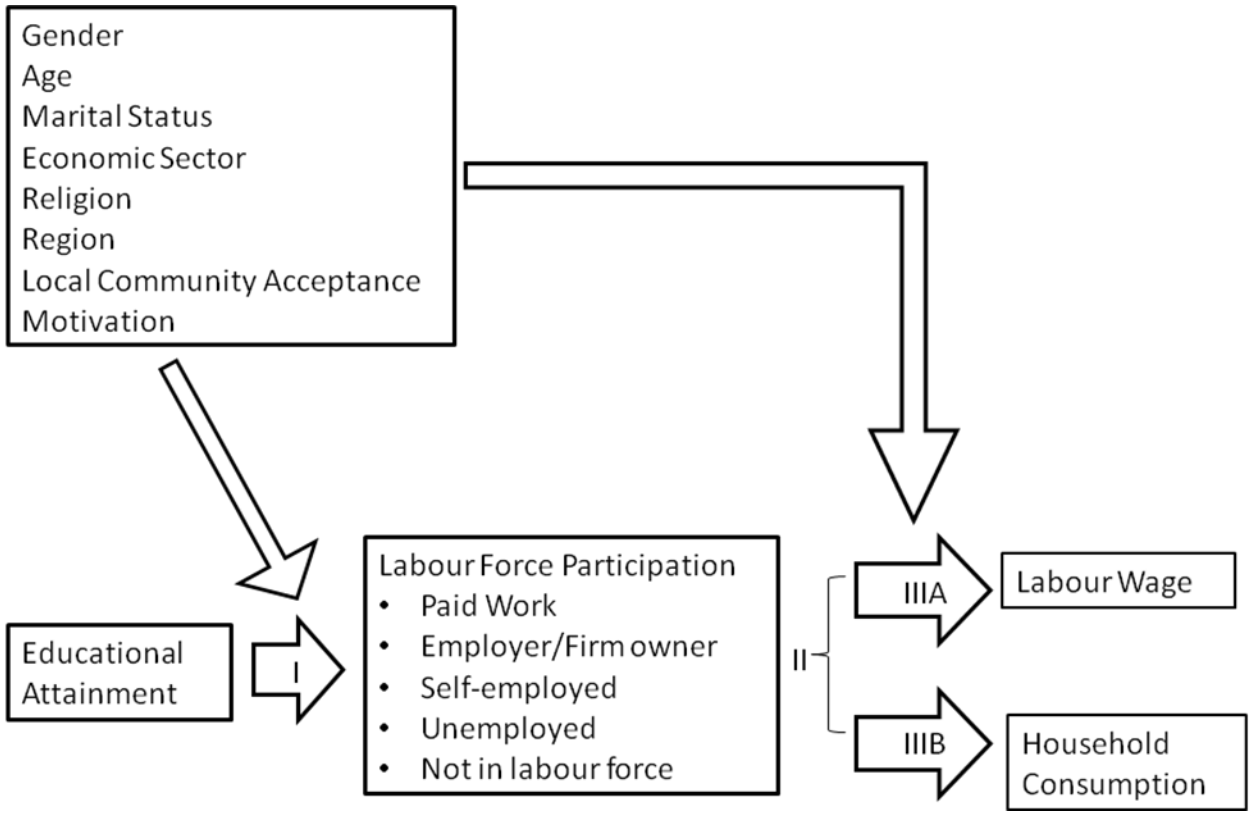


Figure 32: Conceptual Model (as Figure 2)

The section of the analysis labelled "I" sought to answer the question: "How does educational attainment affect the probability of holding any of the employment statuses in a developing country?" By investigating this question, the thesis aimed to discover patterns in educational

attainments (if any) in developing countries as they affect the occupational statuses expressed in the conceptual model.

The section of the analysis labelled "IIIA" sought to empirically analyse how labour wage is determined by labour force participation status after the thesis had observed in part "I" how educational attainment reflects occupational status. Finally, the section of the analysis labelled "IIIB" sought to determine how household consumption is determined by the proportion of individuals in each labour force participation category.

The thesis made use of the simple probit and multinomial probit models for the first assessment on educational comparison, and it made use of Heckman corrected Mincer income estimations and quantile regressions to estimate labour wage premiums and penalties in the second assessment. The third assessment, analysing household consumption, made use of quantile regressions and CDF plots so as to investigate the labour force participation dilemma in detail.

In doing this, the thesis followed the models and techniques of Demirgüc-Kunt et al. (2009), Bargain and Kwenda (2011) and Tamvada (2010) for the three models respectively, while accounting for any potential econometric issues by following Parker, 2009, Bhaumik et al., 2013, Koenker and Hallock, 2001, Demoussis and Mihalopoulos, 2001, Maloney, 2004. It made use of micro-level data of the NBS (2014), who were kind enough to furnish the researcher with the Nigerian Living Standard Measurement Survey (LSMS) data for the years 2004/2005 and 2008/2009. The thesis also made use of reports by (Reynolds et al., 2002, Global Finance, 2014, DoingBusiness, 2014, BritishCouncil, 2012, ILO, 2014) and also the Global Entrepreneurship Monitor reports (GEM).

The reason for these analyses was because Harris and Todaro (1970) along with Ranis and Fei (1961) advocated a model that assumed a stagnant and unproductive informal sector which serves

as a refuge for the urban unemployed and for new migrants who resort to informal self-employment and unemployment. Those authors constructed an explanatory model of developing countries' transition from stagnation to self-sustaining growth. A number of concepts evolved involving urban unemployment, rural-urban labour migration and the welfare implications of various policies. One of the salient presumptions was that if there is a higher minimum wage in the wage sector those in the agricultural sector, the self-employed and the unemployed would be worse off compared to wage workers.

Consequently, as regards developing countries, there is a large branch of the literature that views individuals in the self-employment sector as being pushed there due to lower welfare levels; this school is sometimes called the pessimistic class (Haywood and Falco, 2013). Jhabvala et al. (2003) propound that informality in developing countries, consisting chiefly of the self-employed, is fundamentally a survival activity of the very poor and of disadvantaged workers who are typically unskilled and less educated.

This view is further advocated, by Turnham and Jaeger (1971), Squire (1981), Fields (1980) and Lewis (1954) who classify the self-employed in developing countries as the "working poor" who engage in such activities to escape unemployment. Gindling and Newhouse (2012) report that the self-employed in developing countries work for themselves and earn little either because they have been rationed out of wage jobs or because they prefer the autonomy and flexibility of self-employment; and for several years the dominant view was that large numbers of self-employed workers in developing countries reflected the rationing of employment opportunities in the wage sector, due to regulations or efficiency wages above the market clearing level (Fields, 2004, Tokman, 2007, De Mel et al., 2010).

However, the *pessimistic* view of the self-employed in LDC's being a disadvantaged group is being challenged by an *optimistic* school of thought that argues that self-employment in developing countries may be a desirable employment option that individuals self-select and opt for due to a

variety of reasons, some pecuniary and others non-pecuniary (Maloney, 2004, Bosch and Maloney, 2010, Bosch and Maloney, 2007). In addition, lately, there appears to be a merging of the opposing schools of thought into one whereby the self-employed are seen as made up of both advantaged and disadvantaged workers (Mandelman and Montes-Rojas, 2009, Fields, 2004, Fields, 2007, Cunningham and Maloney, 2001, Günther and Launov, 2012, Fields, 1990). De Mel et al. (2008) also finds heterogeneity among self-employed workers in Sri Lanka and reports that the self-employed should be viewed on two levels; those who are clearly disadvantaged and lack the potential to grow, and others who are advantaged.

Also, Tamvada (2010) measured welfare by household adult equivalent per-capita consumption expenditure for Indian households, and used quantile regressions to find strong empirical evidence that the self-employed who employed others (employers) had the highest welfare in terms of consumption, while the self-employed with no employees (own account workers) had slightly lower returns than salaried employees but a higher welfare than casual labourers. His study proved that the well-being of the self-employed relative to that of wage employees can vary significantly across the earnings distribution, and also that not distinguishing the employers from own account workers could be misleading. This heterogeneity in the self-employment phenomenon especially in developing countries, and the fact the literature has only begun to account for it, forms the context of this study.

5.2: MAIN FINDINGS AND IMPLICATIONS

This study has made contributions to filling a gap in the labour force debate in developing countries' literature relating to the welfare implications of occupational statuses, specifically self-employment and paid/wage work. The reader is once again advised to be careful to understand the caveats when interpreting the results as a full range of observed and unobserved variables are not included in the conceptual model. As stated at the beginning of this thesis, the aim was to find out where the differences in labour wage and household consumption levels come from, as they depend on any of the employment statuses in developing countries. The results found are summarised in Table 29 as follows:

Table 29: Summary of Findings

Hypothesis	Nigerian Data Prediction	Thesis Finding
Hypothesis 1"H_1" Educational attainments will affect the probability of belonging to an employment status in a developing country.	The Hypothesis 1 addresses the portion of the conceptual model labelled "I" which seeks to answer the question: "How do educational attainments affect the probability of belonging to any of the employment/ occupational states in a developing country?" More specifically, the thesis aimed to investigate if more educated individuals were to be found	The thesis discovered that self-employed individuals generally tend to have lower educational attainments when compared to wage workers/paid employees. However, a closer examination reveals that employers tend to have quite similar educational attainments when compared to wage earners while self-employed "own account"

	in self-employment or paid-employment/wage work. The literature that was surveyed in section 2.3.1 highlighted that it is expected that as individuals become more educated in developing countries, they will opt for paid work over self-employment. This means that the expected pattern for the data from Nigeria is that more educated individuals will be engaged in wage work/paid employment while less educated individuals are expected to be in self-employment.	workers tend to have lower educational attainments compared to wage workers/paid employees. Thus educational attainments affect the probability of belonging to an employment status in this developing country, Nigeria.

Hypothesis	**Nigerian Data Prediction**	**Thesis Finding**
Hypothesis 2 "H_2" Workers experience a labour wage penalty or premium depending on their occupational status in a developing country.	The literature that was surveyed in section 2.4.1 highlighted the theoretical expectation that self-employed individuals in developing countries will experience a labour wage penalty when compared to paid workers/wage earners. This means that the expected pattern is that individuals in self-employment in the data from Nigeria should experience a labour wage penalty compared to paid workers. The Hypothesis 2 addresses the portion of the conceptual model labelled "IIIA" which seeks to empirically analyse how labour wage is determined by labour force participation. By performing this analysis, the thesis aimed	The self-employed generally tend to experience a wage penalty when compared to wage workers/paid employees. However, a closer examination reveals that employers tend to experience labour wage premiums when compared to wage earners while self-employed "own account" workers tend to experience labour wage penalties compared to wage workers/paid employees. Quantile regression estimates show that a majority of employers experienced labour wage premiums while only a few of the self-employed "own account" workers, especially those at the upper

	to discover if there are patterns in how occupational statuses affect labour wage. Precisely, the thesis aimed to investigate if paid/wage workers typically earn more or less than self-employed individuals conditional on observable characteristics.	end of the income distribution, reported labour wage premiums compared to paid workers. Thus the thesis found that workers experience a labour wage penalty or premium depending on their occupational status in this developing country, Nigeria.

Hypothesis	Nigerian Data Prediction	Thesis Finding
Hypothesis 3"H_3" In a developing country, total household consumption expenditure will depend on the composition of employment status of the employable household adults.	From the literature that was surveyed in section 2.4.2, it is expected that self-employed individuals in developing countries are disadvantaged across a number of welfare indicators when compared to wage earners. The expected pattern is that individuals in self-employment in the data from a developing country should be worse-off in terms of household consumption when compared to wage earners. This also means that having a higher proportion of self-employed individuals in the household workforce should have a negative relationship with total household consumption and having a higher proportion of wage earning household workforce should have a positive relationship with total household consumption.	Having a higher proportion of the self-employed "own account" workers in the composition of the household is associated with significantly increased household consumption at the lower quantile levels (until around the 50% quantile), while having a higher proportion of paid workers at the upper quantiles is associated with significantly increased household consumption levels. However, the employer category remains consistently above both of the other two categories over the whole range of household consumption. To summarise, the thesis found that total household consumption expenditure depended on the employment

	The Hypothesis 3 addresses the portion of the conceptual model labelled "IIIB" which seeks to determine how total household consumption is determined by the proportion of household individuals in each occupational category. By performing this analysis, the thesis aimed to discover if having a higher proportion of a particular occupational category is beneficial or detrimental to household consumption.	status composition of employable household adults in this developing country, Nigeria.

These findings (from Table 29) can be further analysed as follows when brought into context with the pushed/pulled self-employment debate:

1. As regards self-employment and education. When those in self-employment were treated as one group i.e. employers and own account workers were not separated into distinct groups, the probability of being in self-employment fell as individuals reported higher educational attainments - indicating that the more educated individuals became, the less likely they were to choose self-employment as an employment option. This effect was stronger for women and agrees with the finding of Van der Sluis et al., 2005.

2. Also as regards education and employers. When self-employed workers were split into two distinct groups of employers (self-employed with employees) and self-employed "own account" workers (self-employed without employees), quite interesting patterns emerged. Employers reported similar educational attainments to paid workers, and women employers in particular were found to have a sizeable amount of education. Self-employed "own account" workers, on the other hand, reported significantly lower educational attainments similar to those of the "non active" labour force.

   These indicate that employers have educational characteristics different from self-employed "own account" workers; and this ought to be taken into account in the developing labour force literature. Hence the view of the self-employed as a collective group has to be updated, and distinctions made among the self-employed workforce between 'employers' and 'self-employed "own account" workers' if researchers are to aim to derive meaningful conclusions.

Taken together, these educational results seem to indicate the following:

a) The self-employed in the first instance might actually be a disadvantaged group since they tend to have lower human capital in terms of education; an attribute where high

attainment might be a requirement for getting paid sector jobs. This seems to point to and support the claim that the self-employed have been rationed out of wage sector jobs (Harris and Todaro, 1970, Lewis, 1954, Gindling and Newhouse, 2012) since they do not have the requirements for such jobs in the first place. This gives credence to the *pushed* self-employment argument, as the self-employed in this sector cannot move out of this employment option even if they wanted to, and thus they might be engaged in this occupational category out of necessity.

b) In the second instance, employers have quite similar educational attainments to wage earners so it can be argued that they could have chosen the wage employment option if they wanted to, as they have the educational qualifications to opt for wage work/paid employment. Since they chose to be employers of labour, two theoretical/hypothetical factors could possibly have led to this choice; it might be through necessity, or they could have been pulled into this sector by opportunities they found. Since they have dissimilar educational attainment levels to those of the self-employed "own account" workers, the former is unlikely. Also employers are the smallest sample size found, and given the considerable constraints on starting a business in developing countries, it is most likely a deliberate and thought out decision – indicating *pulled* self-employment. However, it could be a mixture of the two pressures as well.

3. As regards labour wages. When the self-employed were split into "own account" workers and employers, interesting distinctions could once again be made. Quantile regression estimates show that a majority of employers experienced labour wage premiums while only a few of the self-employed "own account" workers, especially those at the upper end of the income distribution, reported labour wage premiums compared to paid workers. The assessments conducted also revealed that the labour wage penalties associated with self-employment were quite substantial till around the 10^{th} and 20^{th} percentiles when the labour wage penalties started showing signs of reduction, becoming income premiums at the upper percentile regions, probably due to the minimum wages that occur in paid employment and not in self-employment, and also because of the nature of the activities being carried out in the various employment statuses.

   This points towards the argument that while a significant proportion of the employers correspond to the advantaged *pull* self-employment category, only a few of the self-employed own account workers who fall in the range of these advantageous upper labour wage quantiles can be classed as *pulled*. On closer examination, the self-employed own account workers who experience such premiums are most likely to be engaged in more rewarding/highly skilled activities, and are more educated than typical self-employed own account workers. (They are engaged in activities like accounting, spinning, retail, writing and distributing technological goods, unlike other self-employed own account individuals who do not earn labour wage premiums and are mainly engaged in activities like car repairs, sculpting and petty trade).

   Specifically, the thesis finds that there is indeed an ordering of incomes into low-income self-employment (which seems to be found mainly in the own account self-employment occupational category), medium-income paid employment, and high-income self-employment (which seems to be found mainly in the employer occupational category); and this corresponds to a similar ordering of low human capital, medium human capital and high human capital among the labour market participants, expressed through educational attainment.

4. Finally, but very significantly, as regards household consumption. Having a higher proportion of the self-employed "own account" workers in the composition of the household is associated with significantly increased household consumption at the lower quantile levels, while having a higher proportion of paid workers at the upper quantiles is associated with significantly increased household consumption levels. This also supports findings from the other analyses since it finds heterogeneity in self-employment. However having a higher proportion of employers is associated with significantly increased household consumption at all levels, as already found by Tamvada (2010).

   Although Tamvada (2010) did not find the distinction in adult-equivalent household consumption between the self-employed and paid work proportions of households that is found in this thesis, this has implications for the labour force debate. It could imply that self-employed individuals could be engaged in activities that contribute to household consumption, but these activities are not captured by labour wages as such.

   This also indicates that the self-employed "own account" workers are mostly *pulled* into self-employment at the lower quantiles but *pushed* at the upper regions. Taken together, it indicates that to enjoy pulled self-employment, individuals should typically be well educated employers of labour or engaged in "own account" self-employment, but only when the benefits in terms of labour wage or household consumption outweigh being in paid work. This is because some self-employed "own account" workers, albeit a minority, have the benefit of pulled self-employment as well.

5.3 POLICY IMPLICATIONS

The policy implication of these results thus involves relevant policy makers pin-pointing who they want their policies to address, and not using a 'one-size-fits-all' approach to all members of the self-employed workforce, as clearly, employers are distinct from self-employed "own account" workers. Policy makers might need to deliberate on a divergent range of measures to meet the different needs of these dissimilar members of the workforce.

Also, as the thesis finds that education increases the probability of being an employer or engaging in paid work, or of occupational statuses associated with higher labour wages and household consumption levels (especially for women), this study also contributes to the literature on the need for educational programmes in developing countries. In relation to theoretical debates, this thesis also finds that both push and pull self-employment can exist in developing countries, but most employers of labour can be classed as experiencing the pulled type of self-employment – a distinction much needed in the developing country labour force literature.

5.4 FUTURE RESEARCH

This thesis gives evidence of segmentation and heterogeneity in the labour force of developing countries and in self-employment in particular. Future research should be careful to distinguish sufficiently in empirical investigations between the different groups of the labour force and especially the self-employed. Moreover, there is an opportunity for research into how the distribution of these employment statuses changes over time and how it influences the different indicators (labour wage and household consumption) measured. There is also room for research as regards non-pecuniary indicators and the effects of infrastructure, government policies and other externalities on labour force probability rates, welfare and the performance of businesses.

Furthermore, as there exists a scarcity of research about the nature of self-employment in developing countries especially in the Sub-Saharan African context, this thesis fills a significant gap in the current literature, while showing that there is still room for research in other countries with similar characteristics; hence cross-country research would be highly beneficial, to strengthen the literature. In addition, an investigation into the nature of self-employment, using time-series panel data, would be highly beneficial to the literature and the current questions being investigated. As regards gender differences, an investigation will be relevant that takes into account the cultural or perceived roles associated with gender in developing countries and the economic variables studied in this thesis.

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APPENDIX

Table 30: Correlation Matrix– 2004 LSMS Survey

	Age	Urban	Unspfd	Noed	Loed	Mided	Highed	VryHied	Married	Houselnd	localang	North	Southeast	Soutwest
Age	1.0000													
Urban	0.0145	1.0000												
Unspecified	0.2448	-0.229	1.0000											
Noed	0.0047	-0.055	-0.118	1.0000										
Lowed	-0.130	-0.043	-0.373	-0.146	1.00									
Mided	-0.160	0.1944	-0.381	-0.149	-0.47	1.0000								
Highed	0.0885	0.1072	-0.149	-0.059	-0.18	-0.188	1.0000							
VeryHighed	0.0762	0.0881	-0.067	-0.026	-0.08	-0.084	-0.033	1.0000						
Married	0.4224	-0.025	0.2518	0.0297	-0.12	-0.155	0.0329	0.0470	1.0000					
HouseorLand	0.000	-0.184	0.1683	0.0225	-0.02	-0.104	-0.054	-0.0291	0.0517	1.0000				
Locallang	-0.126	0.2580	-0.597	-0.077	0.182	0.2957	0.1438	0.0719	-0.1399	-0.1226	1.0000			
North	-0.046	0.0031	0.2990	0.0744	-0.17	-0.114	-0.021	-0.0257	0.1779	0.1445	-0.1910	1.0000		
Southeast	-0.028	-0.282	-0.216	0.0129	0.183	0.0405	-0.052	-0.0193	-0.1731	0.0095	0.0345	-0.388	1.0000	
Southwest	0.1123	0.4010	-0.107	-0.070	0.007	0.0884	0.0388	0.0419	0.0045	-0.1337	0.2090	-0.309	-0.4139	1.0000

Table 31: Correlation Matrix– 2009 LSMS Survey

	Age	Urban	Noed	Lowed	Mided	Highed	VeryHid	Married	Houselnd	locallang	North	Southeast	Southwest	Female
Age	1.0000													
Urban	0.0210	1.0000												
Noed	0.0561	-0.0621	1.0000											
Lowed	-0.0538	-0.0949	-0.1512	1.0000										
Mided	-0.0956	0.0783	-0.2278	-0.6695	1.0000									
Highed	0.1333	0.0469	-0.0834	-0.2452	-0.3694	1.0000								
VeryHighed	0.1180	0.0195	-0.0341	-0.1003	-0.1511	-0.0553	1.0000							
Married	0.3145	0.0065	-0.0300	-0.1275	0.0560	0.1003	0.0327	1.0000						
HouseorLand	0.0036	-0.0882	0.0260	0.0442	-0.0379	-0.0190	-0.0060	-0.0410	1.0000					
Locallang	-0.0427	0.0805	-0.2466	-0.2088	0.2333	0.0929	0.0193	-0.0104	-0.0380	1.0000				
North	-0.0886	-0.1391	0.0437	0.0017	-0.0123	-0.0162	0.0080	-0.0281	0.0746	-0.0920	1.0000			
Southeast	0.0537	-0.2284	0.0661	0.0528	-0.0731	0.0024	-0.0192	0.0426	0.0069	0.0702	-0.2694	1.0000		
Southwest	0.0335	0.3227	-0.0642	-0.0215	0.0554	-0.0077	-0.0097	-0.0174	-0.0674	-0.0128	-0.3573	-0.5093	1.0000	
Female	-0.0735	0.0008	0.0469	0.0897	-0.0351	-0.0789	-0.0571	-0.0558	0.0102	-0.1178	-0.0169	-0.0091	0.0354	1.0000

Table 32: Results of Multinomial Probit Analysis [5.1] [Marginal Effects] - 2004 Survey (Educational Base Category – High Education)

	Male				Female			
Independent Variables:	**Non Active**	**Paid Work**	**Self-Employed**	**Employer**	**Non Active**	**Paid Work**	**Self-Employed**	**Employer**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Age in years	-0.157***	0.0712***	0.0719***	0.0139***	-0.120***	0.0415***	0.0741***	0.00453***
	(0.00802)	(0.00718)	(0.00722)	(0.00214)	(0.00770)	(0.00313)	(0.00676)	(0.000713)
Age (squared)	0.00173***	-0.000756***	-0.000818***	-0.000154***	0.00127***	-0.00045***	-0.000765***	-0.00046***
	(0.000102)	(8.71e-05)	(8.96e-05)	(2.40e-05)	(0.000101)	(4.05e-05)	(8.78e-05)	(9.21e-06)
Urban	-0.0246	0.0351	0.00232	-0.0129	-0.0477	-0.000887	0.0486*	-6.07e-06
	(0.0383)	(0.0296)	(0.0262)	(0.00855)	(0.0291)	(0.0120)	(0.0261)	(0.00281)
No ed	-0.253***	-0.251***	0.525***	-0.0210***	-0.129	-0.0808***	0.221**	-0.0111***
	(0.0328)	(0.0186)	(0.0374)	(0.00615)	(0.110)	(0.00899)	(0.110)	(0.00224)
Unspecified	-0.224***	-0.285***	0.539***	-0.0296***	0.0663	-0.162***	0.114	-0.0190***
	(0.0449)	(0.0180)	(0.0448)	(0.00631)	(0.0859)	(0.0194)	(0.0831)	(0.00435)
Low ed	-0.251***	-0.216***	0.491***	-0.0233**	-0.0602	-0.129***	0.199**	-0.00942**
	(0.0533)	(0.0291)	(0.0501)	(0.0103)	(0.0871)	(0.0186)	(0.0845)	(0.00415)
Mid ed	-0.174***	-0.149***	0.340***	-0.0172	-0.0656	-0.0599***	0.131	-0.00585*
	(0.0566)	(0.0301)	(0.0552)	(0.0123)	(0.0834)	(0.0193)	(0.0818)	(0.0068)
Very high ed	-0.130	0.0895	0.00520	0.0352	-0.0102	0.153	-0.179***	0.0358
	(0.0807)	(0.0809)	(0.121)	(0.0336)	(0.169)	(0.114)	(0.0638)	(0.0446)
Married	-0.361***	0.0992***	0.244***	0.0183**	-0.119***	0.00823	0.114***	-0.00305
	(0.0304)	(0.0329)	(0.0345)	(0.00715)	(0.0300)	(0.0139)	(0.0238)	(0.00395)
Houseorland	0.0572	-0.0701***	0.00257	0.0104	0.0229	-0.00127	-0.0156	-0.00605**
	(0.0393)	(0.0263)	(0.0315)	(0.0103)	(0.0291)	(0.0150)	(0.0254)	(0.00257)
Locallanguage	0.00439	-0.0230	0.0158	0.00279	-0.0622	0.0208	0.0352	0.00615
	(0.0359)	(0.0337)	(0.0376)	(0.00709)	(0.0381)	(0.0166)	(0.0324)	(0.00424)
South-East	0.0391	-0.0865***	0.0729*	-0.0255***	-0.229***	0.0385*	0.198***	-0.00755**
	(0.0429)	(0.0327)	(0.0381)	(0.00776)	(0.0393)	(0.0218)	(0.0419)	(0.00323)
South-West	0.00503	-0.0720***	0.0817**	-0.0147	-0.269***	0.0400*	0.232***	-0.00390
	(0.0377)	(0.0275)	(0.0348)	(0.00898)	(0.0329)	(0.0232)	(0.0342)	(0.00464)
North	0.0118	0.0167	-0.0504	0.0218	0.274***	-0.0228	-0.246***	-0.00519
	(0.0364)	(0.0306)	(0.0361)	(0.0158)	(0.0280)	(0.0193)	(0.0228)	(0.00416)
N	**10,206**	**10,206**	**10,206**	**10,206**	**8,191**	**8,191**	**8,191**	**8,191**
Log-pseudo likelihood	-56425771	-54282972	-54081612	-54081132	-45092930	-43684483	-43624372	-43623821
Frequency	2,932	2,624	4,197	453	4,633	1,045	2,361	152
Wald (Prob > chi2)	7281.91***	7281.91***	7281.91***	7281.91***	3108.79***	3108.79***	3108.79***	3108.79***

*** p<0.01, ** p<0.05, * p<0.1: Standard Errors in Parentheses.

Table 33: OLS Regression: Household Proportions and Consumption – Estimation [5.9]

Dependent Variable LogAESTtConsptnHH	Q(.10)
Labour Force Proportion	
PropSE	-0.049**
	(0.020)
PropEmployer	0.122***
	(0.035)
PropUnemployed	-0.045*
	(0.024)
PropNonLabourForce	-0.069***
	(0.023)
Education	
PropLowEd	-0.022
	(0.023)
PropMidEd	0.085***
	(0.023)
PropHighEd	0.315***
	(0.026)
PropVeryHighEd	0.356***
	(0.075)
Demographics	
Btw31to40	0.105***
	(0.022)
Btw41to50	0.176***
	(0.039)
Btw51to60	0.240***
	(0.056)
Above60	0.567***
	(0.076)
MeanHHAge	-0.008***
	(0.002)
PropFemale	0.059***
	(0.012)
FemaleHHead	-0.186***
	(0.025)
PropMarried	0.018
	(0.018)
PropDivWidow	0.206***
	(0.036)
Location	
Urban	0.186***
	(0.010)
Head Employment Sector	
Public	0.064***
	(0.018)

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 33 Cont'd	
Variable	**Q(.10)**
Regional Controls	
North	-0.135***
	(0.016)
South-East	0.332***
	(0.015)
South-West	0.389***
	(0.015)
Head Industry Class	
Real	-0.028*
	(0.016)
Agriculture	-0.186***
	(0.070)
Trade	-0.013
	(0.028)
Service	-0.004
	(0.020)
C	9.553***
	(0.051)
R^2	0.08

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 34: Heckman Estimation [5.4] – Entire Sample (Table 19b)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.033***	**Employment = 1**	Age in years	0.370***
		(0.010)			(0.007)
	Age (squared)	-0.000***		Age (squared)	-0.004***
		(0.000)			(0.000)
	Urban	0.123***		Urban	0.126***
		(0.017)			(0.030)
	Unspecified	0.014		Unspecified	-0.454***
		(0.041)			(0.067)
	Low Ed	0.207***		Low Ed	0.175**
		(0.039)			(0.068)
	Mid Ed	0.344***		Mid Ed	0.216***
		(0.040)			(0.069)
	High Ed	0.783***		High Ed	-0.099
		(0.046)			(0.081)
	Very High Ed	0.999***		Very High Ed	0.124
		(0.062)			(0.148)
	Male	0.251***		Male	0.964***
		(0.023)			(0.028)
	Married	-0.002		Married	0.337***
		(0.017)			(0.031)
	Christian	0.053		Christian	-0.002
		(0.069)			(0.110)
	Muslim	0.032		Muslim	-0.147
		(0.070)			(0.112)
	House or Land	-0.087***		House or Land	-0.175***
		(0.027)			(0.043)
	LocalLanguage	-0.033		LocalLanguage	-0.047
		(0.021)			(0.035)
	South-East	0.092***		South-East	0.322***
		(0.023)			(0.039)
	South-West	-0.099***		South-West	0.462***
		(0.024)			(0.041)
	North	0.039		North	-0.240***
		(0.026)			(0.040)
	EmployerofLabour	0.126***		Constant	-7.965***
		(0.033)			(0.175)
	SelfEmp	-0.160***			
		(0.017)			
	Constant	10.602***			
		(0.254)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 35: Heckman Estimation [5.4] – Northern Region (Table 20)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.079***	**Employment = 1**	Age in years	0.349***
		(0.024)			(0.017)
	Age (squared)	-0.001***		Age (squared)	-0.004***
		(0.000)			(0.000)
	Urban	0.223***		Urban	0.211***
		(0.043)			(0.064)
	Unspecified	-0.089		Unspecified	-0.004
		(0.091)			(0.121)
	Low Ed	0.123		Low Ed	0.184
		(0.096)			(0.137)
	Mid Ed	0.256***		Mid Ed	0.393***
		(0.095)			(0.133)
	High Ed	0.653***		High Ed	0.316*
		(0.108)			(0.167)
	Very High Ed	1.081***		Very High Ed	0.746
		(0.167)			(0.510)
	Male	0.378***		Male	2.077***
		(0.135)			(0.066)
	Married	-0.003		Married	0.219***
		(0.050)			(0.075)
	Christian	-0.129		Christian	1.385***
		(0.470)			(0.493)
	Muslim	-0.266		Muslim	1.099**
		(0.469)			(0.491)
	House or Land	-0.103*		House or Land	-0.140*
		(0.058)			(0.078)
	LocalLanguage	-0.050		LocalLanguage	0.157*
		(0.064)			(0.089)
	EmployerofLabour	0.123*		Constant	-9.888***
		(0.067)			(0.586)
	SelfEmp	-0.166***			
		(0.048)			
	Constant	9.737***			
		(0.847)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 36: Heckman Estimation [5.4] – Middle Belt Region (Table 20)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.026	**Employment = 1**	Age in years	0.313***
		(0.021)			(0.016)
	Age (squared)	-0.000		Age (squared)	-0.003***
		(0.000)			(0.000)
	Urban	0.144***		Urban	0.365***
		(0.042)			(0.066)
	Unspecified	-0.033		Unspecified	-0.529***
		(0.110)			(0.166)
	Low Ed	-0.047		Low Ed	0.410**
		(0.112)			(0.173)
	Mid Ed	0.144		Mid Ed	0.587***
		(0.118)			(0.174)
	High Ed	0.520***		High Ed	0.196
		(0.123)			(0.194)
	Very High Ed	0.713***		Very High Ed	-0.232
		(0.165)			(0.277)
	Male	0.112		Male	1.205***
		(0.072)			(0.065)
	Married	-0.053		Married	0.553***
		(0.048)			(0.071)
	Christian	-0.248		Christian	0.048
		(0.151)			(0.210)
	Muslim	-0.160		Muslim	-0.186
		(0.152)			(0.209)
	HouseorLand	-0.113		HouseorLand	-0.269**
		(0.071)			(0.105)
	LocalLanguage	0.114**		LocalLanguage	-0.338***
		(0.048)			(0.070)
	EmployerofLabour	0.001		Constant	-7.256***
		(0.069)			(0.370)
	SelfEmp	-0.158***			
		(0.044)			
	Constant	11.379***			
		(0.581)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 37: Heckman Estimation [5.4] – South East Region (Table 20)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	-0.062***	**Employment = 1**	Age in years	0.394***
		(0.019)			(0.012)
	Age (squared)	0.001***		Age (squared)	-0.004***
		(0.000)			(0.000)
	Urban	0.090***		Urban	-0.044
		(0.029)			(0.055)
	Unspecified	0.172***		Unspecified	-0.471***
		(0.063)			(0.131)
	Low Ed	0.362***		Low Ed	-0.187
		(0.057)			(0.120)
	Mid Ed	0.472***		Mid Ed	-0.092
		(0.058)			(0.122)
	High Ed	1.025***		High Ed	-0.344**
		(0.075)			(0.155)
	Very High Ed	1.123***		Very High Ed	0.022
		(0.109)			(0.365)
	Male	0.247***		Male	0.531***
		(0.030)			(0.048)
	Married	-0.019		Married	0.401***
		(0.028)			(0.053)
	Christian	0.139		Christian	-0.048
		(0.085)			(0.162)
	Muslim	0.176		Muslim	-0.069
		(0.193)			(0.366)
	House or Land	-0.046		House or Land	-0.077
		(0.041)			(0.076)
	LocalLanguage	-0.068**		LocalLanguage	-0.045
		(0.028)			(0.054)
	EmployerofLabour	0.197***		Constant	-7.540***
		(0.066)			(0.275)
	SelfEmp	-0.116***			
		(0.028)			
	Constant	12.766***			
		(0.463)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 38: Heckman Estimation [5.4] – South West Region (Table 20)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.043**	**Employment = 1**	Age in years	0.462***
		(0.020)			(0.016)
	Age (squared)	-0.000*		Age (squared)	-0.005***
		(0.000)			(0.000)
	Urban	0.068**		Urban	-0.148**
		(0.031)			(0.071)
	Unspecified	-0.183*		Unspecified	-0.393
		(0.108)			(0.252)
	Low Ed	-0.020		Low Ed	0.209
		(0.099)			(0.235)
	Mid Ed	0.100		Mid Ed	-0.105
		(0.099)			(0.233)
	High Ed	0.553***		High Ed	-0.464*
		(0.107)			(0.245)
	Very High Ed	0.803***		Very High Ed	0.232
		(0.121)			(0.337)
	Male	0.221***		Male	0.387***
		(0.029)			(0.058)
	Married	0.036		Married	0.265***
		(0.031)			(0.065)
	Christian	0.089		Christian	-0.310
		(0.199)			(0.325)
	Muslim	0.098		Muslim	-0.166
		(0.199)			(0.325)
	House or Land	-0.093		House or Land	0.044
		(0.073)			(0.163)
	LocalLanguage	0.057		LocalLanguage	0.028
		(0.057)			(0.126)
	EmployerofLabour	0.183***		Constant	-8.271***
		(0.067)			(0.479)
	SelfEmp	-0.228***			
		(0.030)			
	Constant	10.333***			
		(0.501)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 39: Heckman Estimation [5.4] – Male Sample (Table 21)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	-0.015	**Employment = 1**	Age in years	0.470***
		(0.011)			(0.011)
	Age (squared)	0.000		Age (squared)	-0.005***
		(0.000)			(0.000)
	Urban	0.199***		Urban	0.003
		(0.020)			(0.048)
	Unspecified	-0.111**		Unspecified	-0.207
		(0.053)			(0.131)
	Low Ed	0.097*		Low Ed	0.008
		(0.050)			(0.120)
	Mid Ed	0.231***		Mid Ed	-0.198
		(0.050)			(0.120)
	High Ed	0.717***		High Ed	-0.744***
		(0.057)			(0.135)
	Very High Ed	0.850***		Very High Ed	-0.644***
		(0.075)			(0.199)
	Married	-0.005		Married	0.841***
		(0.025)			(0.058)
	Christian	0.014		Christian	0.225
		(0.088)			(0.175)
	Muslim	0.014		Muslim	0.243
		(0.090)			(0.178)
	House or Land	-0.050		House or Land	-0.235***
		(0.033)			(0.075)
	LocalLanguage	0.002		LocalLanguage	-0.118**
		(0.026)			(0.057)
	South-East	0.139***		South-East	0.068
		(0.028)			(0.060)
	South-West	-0.137***		South-West	0.197***
		(0.028)			(0.063)
	North	0.001		North	0.150**
		(0.030)			(0.067)
	EmployerofLabour	0.115***		Constant	-8.582***
		(0.038)			(0.276)
	SelfEmp	-0.086***			
		(0.021)			
	Constant	12.001***			
		(0.277)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 40: Heckman Estimation [5.4] – Female Sample (Table 22)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.079***	**Employment = 1**	Age in years	0.331***
		(0.020)			(0.010)
	Age (squared)	-0.001***		Age (squared)	-0.003***
		(0.000)			(0.000)
	Urban	-0.016		Urban	0.221***
		(0.032)			(0.042)
	Unspecified	0.143**		Unspecified	-0.437***
		(0.066)			(0.089)
	Low Ed	0.369***		Low Ed	0.229**
		(0.063)			(0.093)
	Mid Ed	0.534***		Mid Ed	0.393***
		(0.069)			(0.095)
	High Ed	0.962***		High Ed	0.354***
		(0.081)			(0.116)
	Very High Ed	1.393***		Very High Ed	1.005***
		(0.122)			(0.311)
	Married	0.022		Married	-0.005
		(0.028)			(0.043)
	Christian	0.083		Christian	-0.080
		(0.108)			(0.149)
	Muslim	-0.028		Muslim	-0.373**
		(0.113)			(0.152)
	House or Land	-0.135***		House or Land	-0.122**
		(0.048)			(0.062)
	LocalLanguage	-0.092***		LocalLanguage	-0.054
		(0.034)			(0.048)
	South-East	0.081*		South-East	0.498***
		(0.048)			(0.055)
	South-West	0.068		South-West	0.745***
		(0.055)			(0.058)
	North	0.082		North	-0.586***
		(0.068)			(0.060)
	EmployerofLabour	0.172***		Constant	-7.035***
		(0.062)			(0.243)
	SelfEmp	-0.326***			
		(0.031)			
	Constant	9.381***			
		(0.530)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 41: Heckman Estimation [5.4] – Entire Sample Robustness Check (Table 23)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.044***	**Employment = 1**	Age in years	0.358***
		(0.014)			(0.006)
	Age (squared)	-0.000***		Age (squared)	-0.004***
		(0.000)			(0.000)
	Urban	0.168***		Urban	0.180***
		(0.018)			(0.027)
	Married	0.000		Married	0.059**
		(0.017)			(0.028)
	Christian	0.095		Christian	0.070
		(0.072)			(0.105)
	Muslim	0.046		Muslim	-0.139
		(0.073)			(0.107)
	House or Land	-0.114***		House or Land	-0.213***
		(0.029)			(0.040)
	LocalLanguage	0.146***		LocalLanguage	0.354***
		(0.021)			(0.027)
	South-East	0.058**		South-East	0.320***
		(0.025)			(0.036)
	South-West	-0.160***		South-West	0.399***
		(0.026)			(0.039)
	North	0.006		North	-0.259***
		(0.028)			(0.037)
	EmployerofLabour	0.124***		Constant	-7.346***
		(0.034)			(0.154)
	SelfEmp	-0.331***			
		(0.017)			
	Constant	10.821***			
		(0.351)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 42: Heckman Estimation [5.4] – Male Sample Robustness Check (Table 23)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.009	**Employment = 1**	Age in years	0.448***
		(0.012)			(0.010)
	Age (square)	-0.000		Age (square)	-0.005***
		(0.000)			(0.000)
	Urban	0.263***		Urban	-0.062
		(0.021)			(0.046)
	Married	0.018		Married	0.847***
		(0.026)			(0.058)
	Christian	0.052		Christian	0.172
		(0.091)			(0.174)
	Muslim	-0.001		Muslim	0.238
		(0.093)			(0.178)
	House or Land	-0.080**		House or Land	-0.233***
		(0.034)			(0.074)
	LocalLanguage	0.158***		LocalLanguage	-0.145***
		(0.022)			(0.050)
	South-East	0.123***		South-East	0.151***
		(0.028)			(0.059)
	South-West	-0.159***		South-West	0.224***
		(0.029)			(0.062)
	North	-0.054*		North	0.159**
		(0.030)			(0.066)
	EmployerofLabour	0.119***		Constant	-8.301***
		(0.039)			(0.252)
	SelfEmp	-0.231***			
		(0.020)			
	Constant	11.639***			
		(0.289)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.

Table 43: Heckman Estimation [5.4] – Female Sample Robustness Check (Table 23)

Dependent Variable	Independent Variables		Dependent Variable	Independent Variables	
Log (Annual Income)	Age in years	0.058**	**Employment = 1**	Age in years	0.326***
		(0.023)			(0.010)
	Age (squared)	-0.001**		Age (squared)	-0.003***
		(0.000)			(0.000)
	Urban	0.016		Urban	0.310***
		(0.035)			(0.041)
	Married	0.006		Married	-0.041
		(0.028)			(0.042)
	Christian	0.160		Christian	0.040
		(0.110)			(0.149)
	Muslim	0.001		Muslim	-0.424***
		(0.116)			(0.153)
	House or Land	-0.163***		House or Land	-0.191***
		(0.050)			(0.061)
	LocalLanguage	0.078**		LocalLanguage	0.268***
		(0.034)			(0.040)
	South-East	0.025		South-East	0.542***
		(0.054)			(0.054)
	South-West	0.008		South-West	0.771***
		(0.060)			(0.057)
	North	0.081		North	-0.613***
		(0.073)			(0.059)
	EmployerofLabour	0.152**		Constant	-7.034***
		(0.064)			(0.228)
	SelfEmp	-0.511***			
		(0.029)			
	Constant	10.361***			
		(0.590)			

* $p<0.1$; ** $p<0.05$; *** $p<0.01$Standard Errors are Reported in Parenthesis.